

CHESTERFIELD COUNTY

www.co.chesterfield.va.us/ManagementServices/Purchasing/purchase.asp

Our vision is to be recognized by our customers and professional peers as an innovative provider of excellence in customer service and as a leader in the purchasing profession.

Our mission is to support our customers in performing their mission by providing quality purchasing services.



SPECIFICATIONS AND INVITATION FOR BIDS

**Purchasing Department
9901 Lori Road
P. O. Box 51
Chesterfield, VA 23832-0051
Telephone No. (804) 748-1617**

**CHESTERFIELD COUNTY PURCHASING DEPARTMENT
GENERAL TERMS, CONDITIONS, AND INSTRUCTIONS
IMPORTANT - READ CAREFULLY BEFORE SUBMITTING BID**

1. SUBMISSION AND RECEIPT OF BIDS:

- a. Sealed bids shall be received until, but no later than the specified time and date of opening as designated in the invitation. Late bids shall be rejected. **Bids, to include addenda or changes to a response, shall not be accepted via a FAX machine or by Internet E-mail.**
- b. In the event that Chesterfield County is closed due to inclement weather and/or emergency situations prior to or at the time set aside for the published bid opening, the bid opening date will default to the next open business day at the same time.
- c. All bids shall be signed on the Terms and Signature Sheet in order to be considered. Bids submitted without a signature shall be rejected. If the Bidder is a partnership or corporation, the Bidder shall show the title of the individual signing the bid, and if the individual is not an officer of the partnership or corporation, if requested, the Bidder shall submit proof that the individual has the authority to bind the partnership or corporation.
- d. **Only when specifically requested in the white pages of the Bid Documents,** shall each bid be accompanied by a bid bond with surety satisfactory to the County Attorney or a Cashier's or a Certified Check, made payable to the Treasurer, Chesterfield County, in an amount equal to five percent of the total bid price. In the event of default by the Bidder, the five percent deposit shall be and represent liquidated damages to the County. Bids received without a bid bond, when specifically requested, shall be rejected.
- e. Bids concerning separate bid invitations are not to be combined on the same form or placed in the same envelope. Bids submitted in violation of this provision may not be considered.
- f. Unless otherwise specified, Bidders are to use the bid form furnished by the County.
- g. No bid shall be altered or amended after the specified time for opening.

2. AMENDING BIDS: Amending or withdrawing bids by a potential bidder prior to bid opening: A potential bidder may amend and/or withdraw a bid before the due date and time set for receipt of bids. All requests from a potential bidder to return their bid shall be in writing, addressed to the Purchasing Department, and signed by a person authorized to represent the person or firm that submitted the bid. The potential bidder may be contacted by telephone to verify the authorization of the return request and the signature involved if there is doubt as to the documents authenticity. **All amendments/alterations to the bid are to be initialed by an individual authorized to represent the person or firm that submitted the bid.**

3. WITHDRAWAL OF BIDS:

Withdrawal: Construction (*Code of Virginia 2.2-4330*)

- a. A bidder for a public construction contract, other than a contract for construction or maintenance of public highways, may withdraw of his bid from consideration if the price bid was substantially lower than the other bids due solely to a mistake therein, provided the bid was submitted in good faith, and the mistake was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or unintentional omission of a quantity of work, labor, or material made directly in the compilation of a bid which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn. If a bid contains both clerical and judgment mistakes, a bidder may withdraw his bid from consideration if the price bid would have been substantially lower than the other bids due solely to the clerical mistake, that was an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of a bid which shall be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn.

No bid may be withdrawn after the scheduled closing time for receipt of bids for sixty (60) calendar days, except as provided in Section 2.2-4330(A)(i), *Code of Virginia*, which states the bidder shall give notice in writing of his claim of right to withdraw his bid within two business days after the conclusion of the bid opening procedure. Any withdrawal request made to the Director of Purchasing must be accompanied by bidder's original work papers, or such request will be rejected.

In order for work papers, documents and materials submitted pursuant to this section to be deemed a trade secret or proprietary information pursuant to *Code of Virginia*, subdivision F of 2.2-4342, a bidder must expressly invoke the aforementioned statute in the notice of withdrawal and specifically state the reasons why protection under 2.2-4342-F is necessary.

Withdrawal: (other than construction)

- b. A bidder for a public contract may request withdrawal of his bid from consideration if the price bid was substantially lower than the other bids due solely to a mistake therein, provided the bid was submitted in good faith, and the mistake was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or unintentional omission of a quantity of work, labor, or material made directly in the compilation of the bid which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn. If a bid contains both clerical and judgment mistakes, a bidder may request withdrawal of his bid from consideration if the price bid would have been substantially lower than the other bids due solely to the clerical mistake, that was an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of a bid which shall be clearly shown by objective evidence drawn from inspection of original work papers documents and materials used in the preparation of the bid sought to be withdrawn. In order for work papers, documents and materials submitted with the notice of withdrawal to be deemed a trade secret or proprietary information pursuant to *Code of Virginia*, subdivision F of 2.2-4342, a bidder must expressly invoke the aforementioned statute in the notice of withdrawal and specifically state the reasons why protection under 2.2-4342-F is necessary.

4. DENIAL OF WITHDRAWAL OF BID: (*Code of Virginia* 2.2-4330)

If the County denies the withdrawal of a bid, it shall notify the bidder in writing stating the reasons for its decision and award the contract to such bidder at the bid price, provided such bidder is a responsible and responsive bidder.

5. MISTAKES IN BIDS

- a. Mistakes discovered following bid opening but prior to award: If there is a significant and obvious disparity between the prices of the lowest apparent responsive bidder and other bidders, the low bidder may be contacted by the purchasing authority to confirm the bid price. This does not relieve a bidder from the responsibility for the submission of a correct bid. If the bidder then alleges a mistake in the bid and can provide clear and convincing evidence that supports the existence of a clerical error to the satisfaction of the purchasing authority, the bid may be withdrawn only after approval by the County.
- b. Mistakes discovered after award: Bids containing mistakes by bidders shall not be withdrawn after award of a contract or issuance of a purchase order.

6. PRICING:

- a. Bidder warrants by virtue of bidding that prices, terms and conditions quoted in his bid will be firm for acceptance for a period of sixty (60) days from the date of bid opening unless otherwise stated by the County or Bidder.
- b. Prices should be stated in units of quantity as specified in the bid form. In case of error in extension of prices in the bid, the unit price shall govern.
- c. When a bid is for goods and/or services to be delivered on a one time only or staggered basis, only firm pricing shall be given consideration. General terms such as "price in effect at time of delivery" shall not be considered for award.

7. **PERFORMANCE AND PAYMENT BOND:** When requested in the bid, the County shall require the successful bidder to furnish a performance bond and labor and material payment bond with surety satisfactory to the County Attorney in the amount of the contract price at the time of or prior to execution of the contract. If bonds are requested in the bid, the successful Bidder shall pay the cost thereof; if not specified, the successful Bidder, when requested to do so, shall secure the bonds and the County shall pay the cost thereof.
8. **DELIVERY POINT AND TERMS:** All items shall be delivered F.O.B. destination, and freight, delivery costs, and incidental charges shall be included in the bid price(s). Failure to do so may be cause for not making award to a Bidder. The Bidder shall assume all liability and responsibility for the delivery of merchandise in good condition to the specified delivery location(s).
9. **PAYMENT TERMS:** If discounts for prompt payment are offered by the bidder, it is required that a minimum of twenty (20) days be allowed for payment. Discounts for prompt payment will not be considered in the evaluation of bids. Discounts for prompt payment will be shown on the purchase order/contract and taken if invoices are processed and payment made within the stipulated time frame. If discounts are not offered, payment shall be made thirty (30) days after receipt of an accurate invoice by the County.
10. **USE OF BRAND NAMES/SUBSTITUTIONS:** Unless otherwise specified in the invitation to bid, the name of a certain brand, make or manufacturer does not restrict bidders to the specific brand, make or manufacturer named; it conveys the general style, type, character, and quality desired, and any product which the County in its sole discretion determines to be the equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted.

In requesting a proposed substitution, the bidder shall submit with the bid form the name of the manufacturer, model number, and complete specifications on the proposed substitution for evaluation by the County. The bidder shall submit, with the bid form, a detailed list of any deviations from these specifications, written or implied. The bidder assumes responsibility for all changes in the work required as a result of the proposed substitution, including any change not listed in the request, but determined by the County to be necessary at a later point of progress in the work.

It shall be understood that the burden of proof for an "equal" product shall be and remain the sole responsibility of the bidder. The County's failure to object to a manufacturer shall not constitute a waiver of any of the requirements of the contract documents, and all products furnished by the listed manufacturer must conform to such requirements. The County's decision of approval or disapproval of a proposed substitution shall be final.

11. **QUALITY:** All materials used for the manufacture or construction of any supplies, materials, or equipment covered by this bid shall be new. Unless otherwise specified in bid, products bid must be new, the latest model, the best quality, and the highest grade workmanship.
12. **ACCEPTANCE OF MATERIAL:** The goods and/or services delivered as a result of this bid shall remain the property of the seller until a physical inspection is made, and thereafter accepted to the satisfaction of the County. In the event the goods and/or services supplied to the County are found to be defective or do not conform to specifications, the County reserves the right to cancel the order upon notice (verbal or in writing) to the seller and return goods to seller at the seller's expense.
13. **DELIVERY:** In the appropriate space, the bidder shall state the time of proposed delivery or project completion in number of calendar days. Unless otherwise specified, quote the earliest delivery possible, as this may be considered a factor in making award. Delivery expressed in calendar days may be given preference over such general terms as "stock", "immediately", and "as soon as possible". As time will be of the essence for any orders placed as a result of this bid, the County reserves the right to cancel such orders, or any part thereof, without obligation, if delivery is not made at the time(s) specified on bid form.
14. **COPYRIGHTS OR PATENT RIGHTS:** The bidder certifies by submission of bid that there has been no violation of copyrights or patent rights in manufacturing, producing, or selling the product or services shipped or ordered as a result of this bid. The successful bidder shall, at his own expense, defend any and all actions or suits charging such infringement, and will save Chesterfield County, its officers, employees, and agents harmless from any and all liability, loss, or expense incurred by any such violation.

15. **SAMPLES:** Evidence in the form of samples may be requested if brand being quoted upon is other than as specified. The County reserves the right to request that such samples be furnished at the time of bid opening. The County also reserves the right to request samples after the date of bid opening. Requested samples shall be furnished free of expense to the County and if not used in testing or destroyed, will, upon request at the time of submission of sample, be returned at the bidder's expense.
16. **TAXES:** Chesterfield County is exempt from payment of Federal Excise Tax and State and Local Sales and Use Tax on all tangible personal property purchased or leased by Chesterfield County for its use or consumption. Tax exemption certification will be furnished upon request. Sales tax, however, is paid by Chesterfield County on materials and supplies that are installed by a contractor and become a part of real property. Contractors are not exempt from paying taxes on these categories, as they are considered to be a cost of doing business and should be considered in pricing when preparing a bid.
17. **LICENSES, PERMITS, AND FEES:** All bids submitted shall have included in price the cost of any business and professional licenses, permits, or fees required by Chesterfield County or the Commonwealth of Virginia.
18. **SIGNED BID CONSIDERED AN OFFER:** This signed bid shall be considered an offer on the part of the bidder and shall be deemed accepted upon approval by Chesterfield County. In case of default by the successful bidder, or failure to deliver the goods and/or services ordered by the time specified, the County may terminate the purchase order and/or contract, and after due notice (verbal or in writing) may procure them from other sources and hold the defaulting bidder liable for any resulting additional cost.
19. **QUALITY EXPECTATION STATEMENT:** Chesterfield County, through its "Total Quality Improvement" initiative, is a recognized leader in providing quality products and services at the most effective cost possible. Therefore, the County fully expects, requires, and shall hold all Contractors, and all agents, staff, representatives, and subcontractors of the Contractor, responsible for, and accountable to, the highest quality standards of professional workmanship, products and services. In the spirit of the County's total quality improvement initiative, the Contractor shall be expected to become a member of the team and perform or provide all work, services and products with a target of "zero defects - zero rework".
20. **AWARD PHILOSOPHY:** Award will be made by the County to the lowest responsible bidder with the lowest responsive bid which is in substantial conformance with the terms, conditions, and specifications of the bid and is in conformance with the *Code of Chesterfield County* and the *Code of Virginia*.

Chesterfield County reserves the right to accept or reject any or all bids or parts of bids, to waive informalities, and to request rebids. The County also reserves the right to award the bid in a manner which the County deems will best serve its interest. Bids making exceptions to the terms and conditions included in this invitation may be considered, but preference may be given to bids with no exceptions taken. It further reserves the right to award the bid on a split order basis, lump sum, or individual item basis, or such combination as shall best serve the interest of the County, unless otherwise specified. The County may award a bid to a single contractor or to multiple contractors. It also reserves the right to increase or decrease quantities at the unit price bid.

21. **FACTORS OTHER THAN PRICE IN AWARD DECISION:** The following factors in addition to price (as they apply) shall be a consideration in the award decision:
 - a. The ability to provide references which may substantiate past work performance and experience in the type of work required for the contract. The lowest responsive bidder(s) may be required to furnish a contractor qualifications statement, to include references, prior to any such award. The County may contact all references furnished by bidders. The right is further reserved by the County to contact references other than, and/or in addition to, those furnished by the bidder. If, in the sole opinion of the County, a bidder is determined to be non responsible as a result of any investigation conducted by or for the County, award will not be made to that bidder.
 - b. The quality of performance/workmanship of previous contracts for goods and/or services delivered to or performed for the County.
 - c. The timely completion of previous contracts for services or the timely delivery of past orders for goods.

- d. The sufficiency of financial resources and its impact on ability of the bidder to perform the contract or provide the services.
 - e. The County reserves the right, at its option, to conduct on-site inspections of any bidder's facilities prior to award. The results of any such inspection will be considered by the County in determining bidder's capabilities of successfully administering the contract.
 - f. The ability and availability of the bidder to provide both quality and timely maintenance, service, and/or parts.
 - g. The resale value, life cycle costing and value analysis of a product.
 - h. The availability and capability of local and regional vendor support as it affects the quantity, quality, and timeliness of the goods and/or services.
 - i. Timely delivery of goods or timely completion of services as stated by bidder.
 - j. Substantial compliance or noncompliance with specifications set forth in bid as determined by the County.
 - k. Inventory capability as it relates to a particular bid.
 - l. Results of product testing.
22. **STATE REGISTRATION OF CONTRACTORS (IF APPLICABLE):** Attention is directed to Chapter 11, Title 54.1 of the *Code of Virginia* (Re: State registration of contractors when applicable), which requires that all bidders shall show evidence of the proper license under the provision of this chapter before such bid is considered.
23. **INTERPRETATION OF BID:** If any party contemplating the submission of a bid on this invitation is in doubt as to the true meaning of any part of the bid, the Purchasing Department should be contacted. Any change to the Invitation to Bid will be made only by written addendum mailed to prospective bidders at the addresses furnished for such purposes. The County will not be responsible for any changes except as noted through a written addendum.
24. **PROPRIETARY INFORMATION:** Section 2.2-4342-E of the *Code of Virginia* states: Trade secrets or proprietary information submitted by a bidder, offeror, or contractor in connection with a procurement transaction or prequalification application submitted pursuant to subsection B of 2.2-4317 shall not be subject to the Virginia Freedom of Information Act (2.2-3700 et seq.); however, the bidder, offeror, or contractor shall (i) invoke the protections of this section prior to or upon submission of the data or other materials, (ii) identify the data or other materials to be protected, and (iii) state the reasons why protection is necessary.
25. **GOVERNING LAW:** Any contract resulting from this Invitation to Bid shall be governed by the provisions hereof and by the laws of the Commonwealth of Virginia. Any dispute arising out of this Contract shall be resolved in the Courts of the Commonwealth of Virginia, in and for Chesterfield County.
26. **TIE BIDS:** In the case of a tie bid, the County may give preference to goods, services, and construction produced in the County or provided by persons, firms or corporations having principal places of business in the County. If such choice is not available, preference shall then be given to goods and services produced in the Commonwealth pursuant to Section 2.2-4324 of the Code of Virginia. If no County or Commonwealth choice is available, the tie shall be decided by lot.
27. **NONASSIGNMENT:** Parties to any resulting contract shall not assign the contract without written consent of the other(s). If any party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the contract.
28. **AUDIT OF VENDOR RECORDS:** The County reserves the right to audit all vendor records in contracts where payments are based on contractor's records of time, salaries, materials, or actual expense.
29. **NEGOTIATION:** If the bid from the lowest responsible bidder exceeds available funds, the County may negotiate with the low bidder to obtain a contract price within available funds.

30. **SECTION 2.2-4311 CODE OF VIRGINIA:** Every contract for goods or services over \$10,000 shall include the following provisions:
1. During the performance of this contract, the Contractor agrees as follows:
 - a. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
 - b. The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such Contractor is an equal opportunity employer.
 - c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
 2. The Contractor shall include the provisions of the foregoing paragraphs a, b, and c in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.
31. **APPROPRIATION OF FUNDS:** The continuation of the terms, conditions, and provisions of any resulting contract beyond June 30 of any year, the end of the County's fiscal year, are subject to approval and ratification by the Chesterfield County Board of Supervisors and appropriation by them of the necessary money to fund said contract for each succeeding year.
32. **SCHOOL BOARD:** When goods and/or services are for the benefit of Chesterfield County Schools, the contract shall be entered into on behalf of the Chesterfield County School Board.
33. **REQUIREMENTS CONTRACTS:**
- a. Whenever a bid is sought seeking a source of supply for a requirements contract for goods and/or services, the quantities or usage shown are estimates only. No guarantee or warranty is given or implied by Chesterfield County as to any minimum or total amount that may or may not be purchased from any resulting contracts.
 - b. The County reserves the right, at its sole option, to renew the contract for consecutive terms.
 - c. The County reserves the right to award bids for requirements contracts based on the pricing of the initial term of the contract or any combination of initial and renewal terms.
 - d. The County may award a bid to a single contractor or to multiple contractors.
 - e. The County reserves the right not to renew the contract at the end of the initial term or any subsequent term.
 - f. The County reserves the right to terminate the contract upon written notice to the contractor(s).
 - g. In the event that a requirements contract is awarded for goods and/or services, the County reserves the right to bid individual bulk purchases if the County deems it will best serve their interest.
 - h. It is understood and agreed to between the parties in a resulting contract that Chesterfield County shall not be obligated to purchase or pay for materials under such contract unless and until they are ordered and delivered.
 - i. Bids based on a firm price or those including a "downward escalator" clause for a requirements contract term may be given preference over lower ones bearing an "escalator" clause.
 - j. The County has the right to extend this contract up to and not to exceed one hundred twenty (120) days following the last term of renewal.

34. DRUG FREE WORKPLACE

During the performance of this contract, the contractor agrees to:

- a. Provide a drug-free workplace for the contractor's employees
- b. Post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition
- c. State in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace
- d. Include the provisions of the foregoing clauses in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

35. **ENVIRONMENTAL MANAGEMENT:** Vendor/Supplier/Contractor shall be responsible for complying with all federal, state, and local environmental regulations relating to transportation, handling, storage, spillage and any other aspect of providing the services specified herein, as applicable.
36. **SECTION 2.2-4343.1 CODE OF VIRGINIA:** Chesterfield County does not discriminate against faith-based organizations.

CHESTERFIELD COUNTY PURCHASING DEPARTMENT
CHESTERFIELD, VIRGINIA 23832-0051
(804) 748-1617

Bid Prepared By:

**Cathy M. Lantz, CPPB
Purchasing Officer**

Invitation To Bid Number:

04-392-8932

January 15, 2004

Sealed bids, subject to the specifications and conditions contained herein and attached hereto, will be received in the Purchasing Department, Chesterfield Administration Building, Room 402, until, but no later than **3:00 p.m.** Local Time Prevailing **February 9, 2004**, and then publicly opened and read aloud to **furnish labor, materials and equipment necessary for New Driveway and Parking Lot at Ecoff Elementary School Athletic Complex for the Chesterfield County Parks Department.**

PRE-BID CONFERENCE

A Pre-Bid Conference will be held on January 28, 2004 at 9:00 a.m. The Conference will be held at Ecoff Elementary School Athletic Complex, 5200 Ecoff Avenue, Chester, VA 23831. Attendance is encouraged; however, it is not mandatory.

If you are an individual with a disability and require a reasonable accommodation, please notify the Purchasing Department (804) 748-1617, three working days prior to need.

To be considered, your bid must be submitted on a copy of this Invitation to Bid. Bidders shall sign this form in the space provided on the Terms and Signature Sheet and return bid document to: Chesterfield County Purchasing Department, Administration Building - Room 402 - Fourth Floor, 9901 Lori Road, P.O. Box 51, Chesterfield, VA 23832-0051. **Mark outside of your envelope with Invitation for Bid #04-392-8932 and opening date of bid.**

Bids, to include addenda or changes to a response, shall not be accepted via Fax machine or by Internet E-mail.

Time is of the essence and any bid received after the announced time and date for submittal, whether by mail or otherwise, will be rejected. The time of receipt shall be determined by the time clock stamp in the Purchasing Department. Bidders are responsible for ensuring that their bids are stamped by Purchasing Department personnel before the deadline indicated. **Late bids received will be so noted in the bid file in order that the vendor's name will not be removed from the subject commodity/service list.**

Nothing herein is intended to exclude any responsible vendor, his product or service or in any way restrain or restrict competition. On the contrary, all responsible vendors are encouraged to bid and their bids are solicited.

For information pertaining to the bid tabulation and award on this procurement transaction, bidders may access public notification electronically at
www.co.chesterfield.va.us/ManagementServices/Purchasing/purchase.asp.

COMMITMENT TO DIVERSITY AND CHESTERFIELD BUSINESSES

Chesterfield County is a rapidly growing progressive community consisting of an increasingly diverse population. This diversity provides for a dynamic and robust community that promotes growth. Chesterfield County believes that all of its citizens should benefit from this economic growth without regard to race, color, religion or economic status.

The county is committed to increasing the opportunities for participation of minority business enterprises, woman-owned businesses and businesses located in Chesterfield County to ensure diversity in its procurement and contract activities. These businesses are encouraged to respond to all Invitations for Bids and Requests for Proposals. In addition, the county strongly encourages each contractor and/or supplier with which the county contracts to actively solicit minority business enterprises, woman-owned businesses and businesses located in the county as subcontractors/suppliers for their projects.

Upon award/renewal of the contract, the successful bidder/offeror shall furnish data requested on the Certification of Subcontractor/Supplier Activity form included in this IFB/RFP document. This information will enable the county to document the dollar level of activity and measure the success of its purchasing and contracting efforts in this endeavor.

DEFINITIONS:

For purposes of Chesterfield County's classification and reporting program, in cooperation with the Virginia Department of Minority Business Enterprise, the following definitions apply:

Woman-Owned Business (WOB) - a business concern that is majority owned by a woman who also controls and operates the business. In this context, "control" means exercising the power to make policy decisions, and "operate" means being actively involved in the day-to-day management.

Minority Business Enterprise (MBE) - a business enterprise that is owned and controlled by one or more socially and economically disadvantaged persons. Such disadvantage may arise from cultural, racial, chronic economic circumstances or background or other similar cause. Such persons include, but are not limited to: African Americans, Asian Americans, Native Americans, Eskimos and Aleuts. (Reference: 2.1-6432.1 of the *Code of Virginia*)

Chesterfield Business (CB) - any private business enterprise, located within the jurisdictional boundaries of Chesterfield County.

Minority - a person who is a citizen of the United States or a legal resident alien and who satisfies one or more of the following:

Asian Americans - all person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands including but not limited to Japan, China, Vietnam, Korea, Samoa, Laos, Cambodia, Taiwan, northern Marinas, the Philippines, U. S. territory of the Pacific, India, Pakistan, Bangladesh and Srilanka and who are regarded as such by the community of which these persons claim to be a part.

African Americans - all persons having origins in any of the original peoples of Africa and who are regarded as such by the community of which these persons claim to be a part.

Hispanic Americans - all persons having origins in any of the Spanish-speaking peoples of Mexico, South or Central American, or the Caribbean Islands or other Spanish or Portuguese cultures and who are regarded as such by the community of which these persons claim to be a part.

Native Americans - all persons having origins in any of the original peoples of North America and who are regarded as such by the community of which these persons claim to be a part or who are recognized by a tribal organization.

Eskimos and Aleuts - all persons having origins in any part of Northern Canada, Greenland, Alaska, and Eastern Siberia and who are regarded as such in the community of which these persons claim to be a part.

Members of other groups - all other individuals found to be socially and economically disadvantaged by the United States Small Business Administration under Section 8(a) of the Small Business Act (15USC637)[a]. (VR486-01-02; September 9, 1992).

CERTIFICATION OF SUBCONTRACTOR/SUPPLIER ACTIVITY
MINORITY BUSINESS ENTERPRISES, WOMAN-OWNED BUSINESSES
AND CHESTERFIELD BUSINESSES

Project/Contract Name/Number:

Contractors shall furnish the information requested below regarding subcontractor(s) or supplier(s).

(This form will be sent by the Purchasing Department to the contractor for completion at the time of award/renewal, as appropriate.)

Name and Address of Subcontractor/Supplier	(T) MBE	(T) WOB	(T) CB	Commodity or Service	Dollar Amount

If a continuation of this list of subcontractors/suppliers is needed, please attach additional pages to this form.

I have no MBE, WOB or CB applicable to this contract _____(T)

Contractor hereby certifies that the above information is correct.

Complete Legal Name of Firm: _____ Date: _____

Form Prepared By: _____

(Type or Print)

DEFINITIONS

- A. **BID** - The proposal submitted by a Bidder on the Bid Form consistent with the Instructions to Bidders, to complete the Work for a specified sum of money and within a specified period of time.
- B. **BIDDER** - An individual, firm, partnership or corporation qualified in accordance with the Virginia Public Procurement Act, and approved by the Owner, that submits a Bid for the Work, either directly or through a duly authorized representative.
- C. **BID BOND** - The bond, with corporate surety, supplied by a Bidder to the Owner, and in all respects satisfactory to the Owner's Attorney, that guarantees the Bidder's compliance with the Contract Documents. A certified check or cashiers check payable to the Owner, delivered with the Bid, may also constitute a Bid Bond.
- D. **BID DOCUMENTS** - All Contract Documents that the Owner or Engineer provides to potential Bidders before the time established for the submission of Bids.
- E. **CHANGE ORDER** - An amendment or modification to the Contract properly executed by authorized representatives of the Owner and the Contractor on the form provided in the Contract Documents.
- F. **COMPLETION OF THE WORK** - The event that occurs when (1) the Work has been completed, successfully tested and approved in accordance with the Contract Documents, (2) all submittals required by the Contract Documents (including Operation and Maintenance manuals) have been made, and (3) all Punch List items and restoration Work required by the Contract Documents has been completed.
- G. **CONTRACT BONDS** - The Performance Bond and Labor and Material Payment Bond executed by the Contractor, with corporate surety and otherwise acceptable in all respects to the Owner's Attorney.
- H. **CONTRACT DOCUMENTS** - The Notice to Bidders, Advertisement, General Terms, Conditions and Instructions, Definitions, Bid Form, Bid Bond, Bond Requirements, Contract, Special Conditions, Supplementary General Conditions, Insurance Provisions (including Instructions Regarding Insurance Certificates), Labor and material payment Bond, Performance Bond, Notice of Award, Notice to Proceed, Escrow Agreement (when used), Change Orders, Drawings, Specifications and Addenda, Special Provisions and any other document incorporated by reference into one of these documents.
- I. **CONTRACT PRICE** - The amount of money which the Owner and the Contractor have agreed that the Owner will pay to the Contractor for performing and completing the Work.
- J. **CONTRACTOR** - The party who has contracted to perform and complete the Work.
- K. **ENGINEER** - The Consulting Engineer who has been designated by the County as Engineer for the project, and the Engineer's authorized agents, inspectors or representatives.
- L. **FINAL ACCEPTANCE** - The event that occurs when the Engineer issues to the County or the County issues to the Contractor a written statement that the Contractor has completely performed all Punch List items, has made all necessary submittals to the Owner and/or Engineer and has satisfied all of the Contractor's obligations under the Contract Documents.

- M. **FINAL INSPECTION** - The inspection conducted by the Owner or Engineer to determine what items of the Work must be completed by the Contractor in order for Completion of the Work to occur. After the Final Inspection is conducted, the Owner or Engineer shall provide the Contractor with a Punch List that the Contractor must complete in order for Completion of the Work to occur. The Owner may perform the Final Inspection instead of, or together with, the Engineer.
- N. **FINAL PAYMENT** - Payment by the Owner to the Contractor after Completion of the Work so that the Contractor has received all payments due him under the terms of the contract documents for performing and completing the Work.
- O. **INSPECTOR** - The person appointed by the Owner to carry out instructions given by the Owner and to inspect the Work performed and the materials supplied by the Contractor.
- P. **OWNER** - Chesterfield County, Virginia, a political subdivision of the Commonwealth of Virginia, and its duly authorized officials, agents and employees.
- Q. **PLANS** - All drawings or reproductions of drawings that depict or relate to the Work. A pictorial representation of the Work or some portion of the Work, showing design, location and dimensions.
- R. **PUNCH LIST** - The list provided to the Contractor by the Engineer or Owner after Final Inspection that includes all items that the Contractor must complete in order for Completion of the Work to occur.
- S. **SPECIFICATIONS** - The directions, provisions and requirements contained in the Contract Documents relating to the method or manner of performing the Work, or to the quantity or quality of materials to be furnished under the Contract Documents.
- T. **SUBCONTRACTOR** - Any individual, firm or corporations having a direct contract with the Contractor for the performance of any part of the Work.
- U. **TIME OF COMPLETION** - The time agreed upon by the Owner and the Contractor in the Contract by which the Contractor is required to accomplish Completion of the Work, plus any extensions of time granted to the Contractor by the Owner pursuant to the Contract Documents.
- V. **THE WORK** - The whole and any part of the construction, labor, materials, equipment, incidentals or services necessary for the Contractor to achieve Completion of the Work as required by the Contract Documents.

SPECIAL BID CONDITIONS

SCOPE OF WORK

Furnish all labor, materials and equipment necessary for New Driveway and Parking Lot at Ecoff Elementary School Athletic Complex for the Chesterfield County Parks Department.

PRE-BID CONFERENCE

A Pre-Bid Conference will be held on January 28, 2004 at 9:00 a.m. The Conference will be held at Ecoff Elementary School Athletic Complex, 5200 Ecoff Avenue, Chester, VA 23831. Attendance is encouraged; however, it is not mandatory.

GUARANTEE

All materials and workmanship shall be guaranteed for a period of twelve (12) months after final acceptance by the County and repairs necessary shall be made by the contractor at his expense.

BONDS

Each bid shall be accompanied by a bid bond from a Surety company satisfactory to the County Attorney or a Cashier's or a Certified Check, made payable to: TREASURER, CHESTERFIELD COUNTY, in an amount equal to five percent of the total bid price.

A Labor and Material Payment Bond and a Performance Bond, each in the amount of 100% of the Contract Price, with a corporate surety authorized to do business in the State of Virginia and otherwise acceptable in all respects to the Owner's Attorney will be required for the faithful performance of the contract. (A sample of the contract is included for review).

Attorneys-in-fact who sign Bid Bonds, Labor and Material Payment Bonds and Performance bonds must file with each bond a certified and effective dated copy of their power of attorney. Each Bid Bond and the accompanying power of attorney should bear the same date. Each Labor and Material Payment Bond and each Performance Bond and the accompanying power of attorney should bear the same date as the date of the Contract.

The party to whom the Contract is awarded will be required to execute the Contract and obtain the Labor and Material Payment Bond and the Performance bond within fifteen calendar days from the date when the Notice of Award together with the Contract is delivered to the Bidder for execution. In case of the failure of the Bidder to execute the Contract within the prescribed time, the Owner may, at his option consider the Bidder in default, in which case the Bid Bond accompanying the Bid shall become the property of the Owner.

RESPONSIBILITY OF BIDDER

The Bidder shall make a careful examination of the project site, shall familiarize himself with existing conditions, and shall satisfy himself as to the quantity and quality of materials and workmanship required for the Work. He shall carefully and thoroughly examine the Contract Documents before submitting a Bid.

LICENSES, PERMITS, AND FEES: All bids submitted shall have included in price the cost of any business and professional licenses, permits, or fees required by Chesterfield County or the Commonwealth of Virginia.

Request for interpretation of plans and specifications should be addressed to: Stuart Connock, Jr., Chief of Design and Construction at (804) 748-1624 or Cathy M. Lantz, CPPB, Purchasing Officer at (804) 748-1701. Bidders are encouraged to submit questions in writing and fax them to (804) 751-4486 or (804) 717-6378 to be given consideration and should be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instruction will be in the form of written addenda to the specifications which, if issued, will be mailed or faxed to all prospective bidders (at the respective addresses or fax numbers furnished for such purposes), not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

The submission of a Bid shall constitute a warranty by the bidder that he has complied with the requirements of this paragraph. The bidder is bound by his bid and his bid reflects an affirmative representation that he has examined the project thoroughly.

DATE OF COMMENCEMENT AND COMPLETION

The date of commencement shall be established in a written Notice To Proceed issued by the Owner.

Work under the Base Bid shall be completed by the date established in this Bid and the Notice To Proceed.

LIQUIDATED DAMAGES

If the said work is not completed within the time limit stated, time specifically being of the essence, the Contractor shall be liable, and hereby agrees to pay the Owner as liquidated damages and not as a penalty, the sum of One Hundred (\$100.00) per calendar day for each and every day that the said work remains incomplete after the expiration of the contract time for completion; the said sum or sums to be deducted from monies due or to become due the Contractor under this contract.

ACCESS TO COUNTY PROPERTY

Access to the County's property shall be coordinated between Stuart Connock, Jr., County Representative and the successful Contractor.

DRAWINGS

NOTE: "The drawings are downloadable."

The drawings, prepared by Resource Planners, Inc., consist of one (1) set of drawings that includes twelve (12) sheets. Drawings are a part of the bid package and can be obtained at our web site at www.co.chesterfield.va.us/ManagementServices/Purchasing/purchase.asp or contact the Chesterfield County Purchasing Department at (804) 748-1617.

If mailing of bid package is requested, Contractors may obtain a limit of two (2) sets of drawings at no charge.

Contractors shall be responsible for any mailing/shipping charges incurred with the distribution of the drawings and project manual. Contractor shall be required to furnish their UPS or Fed-X account

number, as applicable. Contractors may pick up bid document and drawings from the Chesterfield Purchasing Department.

INSURANCE

An original copy of a Certificate of Insurance shall be required and must be furnished by the successful contractor during execution of the contract. The Certificate of Insurance does not need to accompany the bid.

The contractor shall purchase and maintain in force, at his own expense, such insurance as will protect him and the County from claims which may arise out of or result from the Contractor's execution of the work, whether such execution be by himself, his employees, agents, subcontractors, or by anyone for whose acts any of them may be liable. The insurance coverage shall be such as to fully protect the Owner, the Engineer (if applicable) and the general public from any and all claims for injury and damage resulting by any actions on the part of the contractor or his forces as enumerated above. The Contractor shall furnish a copy of an original Certificate of Insurance, **naming Chesterfield County and Chesterfield County School Board as additionally insured.** Should any of the policies be canceled before the expiration date, the issuing company will mail 30 days written notice to the certificate holder. The Contractor shall furnish insurance in satisfactory limits, and on forms and of companies which are acceptable to the Owner's Attorney and/or Risk Management and shall require and show evidence of insurance coverages on behalf of any subcontractors (if applicable), before entering into any agreement to sublet any part of the work to be done under this Contract.

The following insurance requirements are the minimum that will be acceptable:

1. Worker's Compensation Insurance with statutory limits and Employers' Liability Insurance of \$500,000 for one accident or aggregate disease.
2. Commercial General Liability - \$1,000,000 Each Occurrence Combined Single Limit - Including coverage for XC and U hazards
3. Comprehensive Automobile Liability - \$1,000,000 Each Occurrence Combined Single Limit
4. Umbrella Liability Insurance - \$2,000,000 Each Occurrence

All insurance policies under coverages 2 and 4 above shall name the Owner, as additional insured.

The Contractor shall be responsible for maintaining current certificates of insurance on file with the Owner, and the Insurance Company shall be responsible for notifying the Owner thirty (30) days prior to the expiration, cancellation, non-renewal, or material change in the coverage.

The Contractor shall be responsible for continuing in force completed operations, bodily injury and property damage coverage for a minimum of two (2) years after completion and acceptance of the work.

For projects with a construction cost of less than \$50,000, Builder's Risk coverage for the full project value shall be paid for and provided by the Contractor and be subject to approval by the Office of Risk Management. This coverage shall be provided by a company with an A.M. Best rating of no less than B+. The County shall be named as an additional insured.

For projects with a construction cost of more than \$50,000, the Builder's Risk coverage will be provided by the County, however, the Contractor shall be responsible for the first \$10,000 of any claim. The County's Builder's Risk coverage is \$50,000 self insured retention.

INSTRUCTIONS REGARDING INSURANCE CERTIFICATES

The Contractor and his insurance company should carefully review the insurance requirements applicable to this job. All requirements herein must be met before the County will execute the contract. In particular, we would call your attention to the following:

1. Please note that the Insurance Certificate must state that the Commercial General Liability and the Umbrella Liability Insurance Policies name **Chesterfield County and Chesterfield County School Board** as additionally insured. This requirement may be met by placing the following language on the Certificate. Many Certificates have a space headed "**DESCRIPTION**" where the language may be inserted as follows:

Chesterfield County and Chesterfield County School Board is additionally insured *or that* Chesterfield County and Chesterfield County School Board is additionally insured with respects to General Liability; and/or Umbrella Liability policies.

2. The Insurance Certificate must also contain the required statement concerning notice of cancellation or other change in coverage. The statement used on some Certificate forms is not acceptable. The statement which is required by the contract documents reads as follows:

"Such certificate shall provide that in the event of the cancellation of the policy or policies listed on such certificate, not less than 30 days notice in writing shall be given to the County.

NOTE: The cancellation clause in the Insurance Certificate shall be modified by striking the words 'endeavor to' in the second line and by striking the clause reading 'but failure to mail such notice shall impose no obligation or liability of any kind upon the company'."

3. The Certificate Holder should be listed as:

Chesterfield County
c/o Purchasing Department
P. O. Box 51
Chesterfield, VA 23832-0051
IFB/RFP No. _____

4. Certificate of Insurance must have an original signature.

SUPPLEMENTARY GENERAL CONDITIONS

1. QUALIFICATIONS OF BIDDERS

The Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

2. SUBMITTALS

If requested, the Bidder shall submit the following information to the County within seven days of notification of selection for the award of a Contract for the Work:

- a. a designation of the Work to be performed by the Bidder with his own forces;
- b. the proprietary names and the suppliers of principal items or systems of materials and equipment proposed for the work;
- c. a list of names of the Subcontractors or other persons or entities proposed for the principal portions of the Work.

Prior to the award of the Contract, the County will notify the Bidder in writing if the Owner, after due investigation, has reasonable objection to any such proposed person or entity. If the Owner has reasonable objection to any such proposed person or entity, the Bidder may submit an acceptable substitute person or entity.

The Owner may, at his discretion, accept the substitution, or he may disqualify the Bidder. In the event of disqualification under this Sub-paragraph, bid security will not be forfeited.

Persons and entities proposed by the Bidder and to whom the Owner has made no reasonable objection under the provisions of Sub-paragraph (c) must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner.

3. PRE-CONSTRUCTION CONFERENCE

A pre-construction conference to include representatives of the Owner, the Engineer (if applicable), and the Contractor shall be mandatory prior to start of construction unless waived by the Owner. Pre-construction conference shall be scheduled at least three (3) days prior to start of construction.

4. SUPERVISION AND CONSTRUCTION PROCEDURES

The Contractor shall supervise and direct the Work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.

The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor.

5. CLEANING UP

The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the Work, he shall remove all his waste materials and rubbish from and about the Project as well as all his tools, construction equipment, machinery and surplus materials.

6. MATERIALS AND WORKMANSHIP

The Contract Documents describe the character and features of the materials and workmanship required to perform the Work. The Contract Documents require first class work and materials in all particulars. It is understood that the contract includes any and all work that may be necessary to connect the work done with the adjoining work in a proper and workmanlike manner.

The Owner reserves the right to employ an independent testing laboratory to conduct tests of materials, etc. as the Owner may deem necessary to assure complete compliance with the requirements of the specifications. The Contractor shall offer full cooperation with personnel in the employ of the Owner in making these tests.

7. NO DEVIATION FROM CONTRACT DOCUMENTS BY THE CONTRACTOR

In performing the Work, the Contractor shall not deviate from the Contract Documents without the written consent of the Owner. If the Contractor does deviate from the Contract, he shall correct the error at his expense in a manner satisfactory to the Owner.

8. INTERPRETATION OF CONTRACT DOCUMENTS

In case of discrepancy between or among Contract Documents, the Owner shall make such interpretations as may be deemed necessary for the fulfillment of the intent of the Contract Documents as construed by him and his decision shall be final.

The Contractor shall verify all figures on the Plans and will be responsible for the proper coordination of all dimensions as well as the different parts of the Work.

9. OTHER PLANS AND WORKING DRAWINGS (SHOP DRAWINGS)

Such information as is necessary to give a comprehensive idea of the construction contemplated, are shown on the Plans. Contractor shall submit to the Owner for his approval such additional detailed shop or working drawings as may be required for the construction of any part of the work. Pending the approval of such drawings, any work done or materials ordered shall be at the risk of the Contractor.

10. DISCREPANCIES

The Contractor shall immediately report to the Owner, in writing, any discrepancies found between the Contract Documents and site conditions or any inconsistencies or ambiguities in the Contract Documents. The Owner shall promptly correct such inconsistencies or

ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk.

11. FINAL INSPECTION

At time of final inspection, the Contractor, if requested, shall provide a knowledgeable representative to assist in the inspection of the completed installation for conformance with specifications. The Owner or Engineer shall prepare a Punch List. Any deficiencies shall be promptly and permanently corrected prior to final acceptance of the work, and shall be the full responsibility of the Contractor.

12. PAYMENT

If the Contractor performs, properly, all of the obligations of the Contract Documents, the Owner shall pay the Contractor for the performance of the Work in the manner and within the time specified in the Contract Documents.

13. MONTHLY ESTIMATES AND RETAINAGE

On the 20th day of each month, or at any other regular time agreed upon by the Owner and Contractor, the Contractor shall prepare and submit to the Owner a monthly estimate for Partial Payment. The monthly estimate shall cover items of work for which the Contractor is entitled to be paid since the last previous monthly estimate was submitted, including (1) the value of the Work done, (2) major items of equipment or materials delivered to the site of the project to be installed by the Contractor, as substantiated by submitted invoices and as approved by the inspector, and (3) materials incorporated into the Work.

The Owner shall pay to the Contractor all sums due under the monthly estimate less five percent (5%) retainage on or before the 15th day of the month following the submission of the monthly estimate, unless the Owner asserts a right to withhold some or all of the payment under the provisions of the Contract Documents.

The Contractor will be paid for materials delivered to and stored on the job site. Payment will be for actual cost of materials as evidenced by receipted invoices, less five percent (5%) retainage. The contractor shall make a separate accounting of these materials and shall submit an accounting of them, with four (4) copies, along with the monthly estimate for partial payment.

14. PARTIAL PAYMENT NO WAIVER OF RIGHTS

Partial payments made under this Contract by the Owner are not evidence of the proper performance by the Contractor either in whole or in part, and no payment made by the Owner shall be construed to be an acceptance of defective or improper work. No act of the Owner or the Engineer or the representative of either of them in superintending or directing the Work, no failure to disapprove or reject any material used in the Work, and no extension of time for the completion of the Work shall be construed as acceptance of the Work either in whole or in part. Acceptance of the work by the Owner shall occur only upon Final Payment by the Owner.

15. TERMINATION FOR BREACH OF NON-PERFORMANCE

If the Contractor fails to perform the Work promptly and diligently, or if the Contractor breaches the Contract in any other way, the Owner may:

- 1) after providing the contractor with fifteen (15) days written notice, supply any workmen, equipment or materials necessary to ensure that the Work is performed promptly and diligently. The Owner may deduct the cost of supplying additional workmen, equipment or materials from payments due to the Contractor;
- 2) terminate the Contract, enter upon the premises, take possession of all equipment, materials or appurtenances, and employ any person or persons to finish the Work.

In case of termination of the Contract by the Owner pursuant to this paragraph, the Contractor shall not be entitled to receive any further payment from the Owner until Completion of the Work has occurred. After completion of the Work, the Owner shall pay to the Contractor the amount of the unpaid balance due to the contractor at the time the Contract was terminated minus the cost incurred by the Owner to complete the Work. If the cost incurred by the Owner to complete the Work exceeds the unpaid balance due to the Contractor, the contractor shall be due no money from the Owner and, instead, the Contractor shall pay to the Owner the difference between the unpaid balance due and the Owner's cost to complete the Work.

16. WAIVER OF ONE BREACH NOT WAIVER OF OTHERS

No waiver by the Owner or its agents or employees of any breach of this Contract by the Contractor shall be construed as a waiver of any other or subsequent breach of the Contract by the Contractor. All remedies provided by this Contract are cumulative, and in addition to each and every other remedy under the law.

BID FORM

To: **Chesterfield County**

For the Construction of: New Driveway and Parking Lot at Ecoff Elementary School Athletic Complex for the Chesterfield County Parks and Recreation Department.

The undersigned Bidder has carefully examined the site of work, General Terms and Conditions, Special Bid Conditions, Supplementary General Conditions, Drawings and Technical Specifications, for the construction of the above named project, and in compliance with the Advertisement dated January 15, 2004, will provide all necessary machinery, tools, apparatus, and other means of construction, and do all the work and furnish all the material called for by said Specifications, in the manner prescribed therein, and will complete the Contract within ____ consecutive calendar days.

BASIS OF AWARD

Award will be made by the County to the lowest responsible bidder with the lowest responsive bid which is in substantial conformance with the terms, conditions, and specifications of the bid. Award will be made to a single bidder that meets the above requirements.

BASE BID

Driveway and Parking Lot adjacent to Baseball Fields 1 and 2, including concrete walk, security lighting, new dumpster enclosure, planting and fencing (See drawings for limits of work).

_____ Dollars \$ _____

TIME OF CONSTRUCTION

If awarded a Contract, the undersigned agrees to substantially complete work to a fully operational condition by July 1, 2004.

Substantial Completion by July 1, 2004 Yes _____ No _____

ADDENDUM INFORMATION (If Applicable)

Receipt of the addendum listed below is acknowledged and the proposals incorporate all requirements of this addendum:

_____ Dated _____
_____ Dated _____
_____ Dated _____

Accompanying this Bid is a Bid Bond/Certified/Cashier's Check in the amount of _____ payable to Treasurer, Chesterfield County, Virginia, which is to be forfeited to the extent necessary to make up the difference between the Bid and the second low bid, if the undersigned shall fail to execute the Contract and furnish satisfactory Performance and Labor and Material Payment Bonds under the conditions and within the time specified. If the Bid Bond or guarantee is not sufficient to make up the difference between the Bid and second low bid, together with any consequential damages, the undersigned Bidder agrees to pay the Owner any losses in excess of the bond or guarantee.

The undersigned Bidder agrees to begin the work not later than fifteen (15) calendar days after the date specified in the Notice to Proceed and to prosecute the work in such manner as to complete it within the time limit as set forth above.

If the bid from the lowest responsible bidder exceeds available funds, the County may negotiate with the low bidder to obtain a contract price within available funds.

CONTRACTOR REGISTRATION

If a contract for construction, removal, repair or improvement of a building or other real property is for Seventy Thousand Dollars (\$70,000) or more, or if the total value of all such contracts undertaken by a Bidder within any twelve-month period is Five Hundred Thousand Dollars (\$500,000) or more, the Bidder is required under Title 54.1, *Code of Virginia* (1950), as amended, to be licensed by the State Board of Contractors as a "CLASS A CONTRACTOR". If such a contract is for Seventy-five Hundred Dollars (\$7,500) or more (One Thousand Dollars [\$1,000] for electrical, plumbing and HVAC work) but less than Seventy Thousand Dollars (\$70,000), the Bidder is required to be licensed as a "CLASS B CONTRACTOR". If such a contract is for One Thousand Dollars (\$1,000) or more but less than Seventy-five Hundred Dollars (\$7,500) and is not for electrical, plumbing and HVAC work, the Bidder is required to be licensed as a "CLASS C CONTRACTOR". The Contractor license shall have the appropriate specialty classification that is predominant for the respective work. The Bidder shall indicate in the space provided whichever of the following notations is appropriate, inserting his contractor license number and specialty.

Licensed Class A Virginia Contractor No. _____

Licensed Class B Virginia Contractor No. _____

Licensed Class C Virginia Contractor No. _____

Specialty:_____

If the Bidder shall fail to provide this information on his bid or on the envelope containing the bid and shall fail to promptly provide said Contractor license number to the County in writing when requested to do so before or after the opening of Bids, he shall be deemed to be in violation of Section 54.1-1115 of the *Code of Virginia* (1950), as amended, and his bid will not be considered.

If a Bidder shall fail to obtain the required license prior to submission of his bid, the bid shall not be considered.

TERMS AND SIGNATURE SHEET

CERTIFICATION OF NON-COLLUSION

My signature below certifies that the accompanying Bid is not the result of or affected by, any act of collusion with another person or company engaged in the same line of business or commerce, or any act of fraud punishable under Title 18.2, Chapter 12, Article 1.1 of the *Code of Virginia*, 1950, as amended. Furthermore, I understand that fraudulent and collusive bidding is a crime under the Virginia Governmental Frauds Act, the Virginia Government Bid Rigging Act, the Virginia Anti-Trust Act, and Federal Law and can result in fines, prison sentences, and civil damage awards.

I agree to abide by all conditions of this Bid and certify that I am authorized to sign this Bid.

If discounts for prompt payment are offered by the bidder, it is required that a minimum of twenty (20) days be allowed for payment. Discounts for prompt payment will not be considered in the evaluation of bids. Discounts for prompt payment will be shown on the purchase order/contract and taken if invoices are processed and payment made within the stipulated time frame. If discounts are not offered, payment shall be made thirty (30) days after receipt of an accurate invoice by the County. Our terms are _____

Complete Legal Name of Firm: _____

Order From Address: _____

Remit To Address: _____

Signature: _____

Name (type/print): _____

Title: _____

Fed ID No.: _____ **Phone (____)** _____ **Fax (____)** _____

We hereby provide the following information to Chesterfield County regarding our business. We understand that it is provided for statistical purposes only and all firms submitting bids will receive equal consideration.

Minority Business Enterprise: Yes _____ No _____

Woman-Owned Business: Yes _____ No _____

Chesterfield Business: Yes _____ No _____

CONTRACTOR DATA SHEET
TO BE COMPLETED AND SUBMITTED WITH BID

QUALIFICATIONS: Firms shall have the capability and capacity in all respects to fulfill the contractual requirements to the satisfaction of the County.

Indicate the length of time you have been in business as a company providing the type of service required for this contract.

_____ years _____ months

Provide a minimum of three (3) references which may substantiate past work performance and experience in the type of work required for this contract.

Name, Address, Phone Number and Contact Person

1. _____

2. _____

3. _____

SECTION 01010 - DESCRIPTION OF WORK # 10583

1.0 GENERAL

1.1 DESCRIPTION:

- A. The Work of this contract is titled: “**Ecoff Elementary School Athletic Fields –Drive and Parking**” and is defined in the Contract Documents including the Drawings and Project Manual and shall be referred to for detailed description and requirements of the work involved.
- B. The Project Manual contains Bidding Requirements, General Conditions of the Contract and Technical Specifications.
- C. The Drawings consist of the following sheets:
 - T-1 Title Sheet
 - C-1 Layout Plan
 - C-2 Grading Plan
 - C-3 Erosion Control Plan
 - C-4 Omitted
 - C-5 Erosion Control Details & Specifications
 - C-6 Omitted
 - C-7 Construction Details
 - C-8 Construction Details
 - C-9 Demolition Plan
 - S-1 Storm Water Profiles
 - P-1 Planting Plan
 - E-1 Site Lighting Electrical Plan
 - E-2 Site Lighting Electrical Details
- D. The **Base Bid** includes complete construction of Drive and Parking Lot to serve existing 180 foot and 200 foot baseball fields. Also included are portions of the security lighting, a concrete sidewalk, new masonry dumpster enclosures, plantings and a security fence. The work includes but is not limited to the following: clearing ,grubbing, grading, demolition, erosion control , drainage, bituminous and concrete paving, unit masonry construction, buried cable installation, electrical, lighting, planting and fencing.

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:**

Work Included: This section applies to situations in which the Contractor or his representatives including, but not necessarily limited to, suppliers, sub-Contractors, employees, and field engineers, enter the Owner's property.

1.2 QUALITY ASSURANCE:

- A. Promptly upon award of the Contract, notify all pertinent personnel regarding requirements of this section.
- B. Require that all personnel who will enter the Owner's property certify their awareness of and familiarity with the requirements of this section.

1.3 SUBMITTALS:

Submit to the Owner a record of names and identification of all persons who will be entering upon the Owner's property in connection with the work of this Contract.

1.4 CONTRACTOR'S VEHICLES:

Parking for Contractor's vehicles and vehicles belonging to employees of the Contractor, and all other vehicles entering the Owner's property in performance of the work of the Contract shall park within the work area or other areas as authorized by the Owner.

1.5 SECURITY:

Restrict the access of all persons entering upon the Owner's property in connection with the work to the access route and to the actual site of the work.

1.6 TIME OF WORK:

- A. In order to meet completion date, with prior notice, the Owner will permit construction work to be carried out beyond the normal hours of 6:00 p.m. and 7:00 a.m. local prevailing time and on Saturday or Sunday if necessary for the timely completion of project, protection of the public and the proper care of work already performed.
- B. In order to work the extended hours contained in the time limits stipulated above, permission from the Owner shall be requested in writing by the Contractor. The Contractor shall obey all local ordinances and shall obtain any waivers necessary for working the extended time limits specified.

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:**

A. In addition to Contract requirements, upon written instructions of the Owner's Representative:

1. Uncover work to provide for Owner's Representative observation of covered work.
2. Remove samples of installed materials for testing.
3. Remove work to provide for alteration of existing work.

1.2 SUBMITTALS:

A. Prior to cutting which affects structural safety of project, or work of another contractor, submit written notice to Owner's Representative, requesting consent to proceed with cutting, including:

1. Identification of project.
2. Description of affected work.
3. Necessity of cutting.
4. Affect on other work, on structural integrity of project.
5. Description of proposed work. Designate:
 - a. Scope of cutting and patching.
 - b. Contractor and trades to execute work.
 - c. Products proposed to be used.
 - d. Extent of refinishing.
6. Alternatives to cutting and patching.
7. Designation of party responsible for cost of cutting and patching.

B. Prior to cutting and patching on instruction of Owner's Representative, submit cost estimate.

C. Should conditions of work, or schedule, indicate change of materials or methods, submit written recommendation to Owner's Representative, including:

1. Conditions indicating change.
2. Recommendations for alternative materials or methods.
3. Submittals as required for substitutions.

D. Submit written notice to Owner's Representative, designating time work shall be uncovered, to provide for observation.

1.3 PAYMENT FOR COSTS:

A. Cost caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of Owner's Representative: The Contractor, as defined in the General Conditions.

B. Work done on instructions of Owner's Representative, other than defective or non-conforming work: Owner.

2.0 PRODUCTS**2.1 MATERIALS:**

For replacement of work removed: Comply with specifications for type of work to be done.

3.0 EXECUTION

3.1 INSPECTION:

- A. Inspect existing conditions of work, including elements subject to movement or damage during:
 - 1. Cutting and patching.
 - 2. Excavating and backfilling.
- B. After uncovering work, inspect conditions affecting installation of new products.

3.2 FINISHING:

Refinish entire surfaces as necessary to provide an even finish.

- A. Continuous Surfaces: To nearest intersections.
- B. Assembly: Entire refinishing.

END OF SECTION

SECTION 01141 CONSTRUCTION ACTIVITIES IN A PUBLIC PARK

1.0 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. This Section includes requirements for temporary safety measures, traffic control measures, management of construction equipment after normal working hours, and daily scheduling of new construction.
- B. Temporary Safety Measures include, but are not limited to, the following:
 - 1. Temporary chain link fencing
 - 2. Plastic Safety Fence
 - 3. Barricade Tape
 - 4. Wooden Barricade
 - 5. Safety Personnel
- C. Traffic Control Measures include, but are not limited to, the following:
 - 1. Traffic Signs
 - 2. Traffic Cones
 - 3. Barricades
- D. Management of Construction Equipment and protection of work in place, after Normal Working Hours include, but is not limited to, the following:
 - 1. Padlocks
 - 2. Chains
 - 3. Security personnel

1.3 SUBMITTALS

- A. Company safety policy and procedures: At the pre-construction meeting, submit a copy of the company's "Safety Policy and Procedures Manual". Each employee must be required to read, understand and follow the procedures listed in the manual in order for the manual to be considered valid.
- B. Park Safety Management Documentation: Prior to starting construction, submit a copy of the procedures that will be used to ensure safe construction practices within the park setting specific to the scope of work. At a minimum, the document shall include the following:
 - 1. A list of the equipment for the Temporary Safety Measures that will be used and where they will be used.
 - 2. A list of the Traffic Control Measures that will be used and where they will be used.

SECTION 01141 CONSTRUCTION ACTIVITIES IN A PUBLIC PARK

3. Locations for storing the construction equipment after hours and stockpiling materials.
4. A map showing how each phase or area of the construction will be segregated from the public. Multiple maps may be required depending on the complexity of the phasing.
5. A general schedule for each phase or area of construction. The schedule is different from the schedule for the owner as it will show the order of each phase and area of construction and approximate dates. This document will be reviewed for coordination with the park schedule for upcoming events.

1.4 PROJECT CONDITIONS

- A. Upon starting construction, the contractor understands that the park remains open after normal working hours and on weekends and holidays. The contractor also understands that the construction equipment and construction site may be subject to intrusion, vandalism, and theft from minors using the park since the construction equipment and site will be left unsupervised.
 1. The contractor will be responsible for repairing and replacing equipment at no cost to the owner.
 2. Neither the owner, park operator, nor the engineer will be liable for any damage caused by park patrons.
 3. If equipment is vandalized or stolen, the contractor shall contact the appropriate authorities to report the damage. The contractor may pursue, at no cost to the owner, compensation for the damages from the responsible party.
 4. If the new construction is vandalized, the contractor shall provide the repairs at no cost to the owner.
- B. The contractor shall provide Temporary Safety Measures around the areas of construction to minimize the possibility of damage to the new construction, construction equipment, and injury to park patrons.
 1. If an injury to a park patron occurs as a result of the construction, either during or after normal working hours, the contractor shall be held liable.
 2. If damage to a park patron's belonging(s) occur(s) as a result of the construction, either during or after normal working hours, the contractor shall be held liable.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete bases for supporting posts. Provide a lockable gate for the fence that will safely allow the passage of construction vehicles.
- B. Plastic Safety Fence: International orange plastic safety fence with a tensile yield of 2000 lbs per 4 foot width per ASTM 638, a ultimate tensile strength of 2900 lbs per 4 foot width per ASTM 638, elongation at break greater than 1000% per ASTM 638, and chemically inert to

SECTION 01141 CONSTRUCTION ACTIVITIES IN A PUBLIC PARK

most chemicals. The fence shall be at least 60 inches high and securely fastened to metal post imbedded 24" into the ground located at each turn and a maximum of 10 feet apart.

- C. Barricade Tape: 3 inch wide 0.11 inch thick yellow polyethylene tape with the words "CAUTION" uniformly printed throughout the tape length in 2 inch high black letters. The tape shall be smooth, uniform and free of defects and irregularities. The tape shall have a tensile strength at breaking of 4000 psi with an elongation at breaking at least 400%. The tape shall be installed 36" above the ground on wooden stakes located at each turn and a maximum of 5 feet apart.
- D. Wooden Barricade: 2 inch by 10 inch by 8 feet long wood beam painted orange with black 2 inch wide striping supported 36 inches above the ground on a base can be moved by hand. On the wood beam, a "CAUTION" or "DANGER" sign shall be securely fastened in the middle of the beam.
- E. Security Personnel: An employee of the contractor, paid as part of the construction contract, who shall remain after the construction crew leaves the area of concern and stays until the park closes. The employee shall be responsible for directing park patrons away from the construction area and equipment. Multiple security personnel may be deemed necessary and shall be provided by the contractor at no additional cost to the owner.
- F. Traffic Signs: Traffic signs shall comply with "The Manual on Uniform Traffic Control Devices" latest edition.
- G. Traffic Cones: Traffic cones shall be bright orange plastic cones at least 30 inches high and shall sufficiently flexible to not cause damage to vehicles if the cones are impacted or run over, but resilient enough to return to the original shape and remain vertical.

SECTION 01141 CONSTRUCTION ACTIVITIES IN A PUBLIC PARK

PART 3 – EXECUTION

3.1 CONSTRUCTION PRACTICES, GENERAL

- A. Locate Temporary Safety Measures to limit park patron access to the new construction and construction equipment.
- B. Locate Traffic Control Measures such that traffic movement throughout the park is not disturbed and so the new traffic patterns are easy to understand.
- C. At the end of each working day:
 - 1. Clean up the site removing any tools that may be lifted unaided by mechanical equipment.
 - 2. Locate the construction equipment in the area designated during the Pre-Construction meeting, lock all doors and remove any keys. Using chains and padlocks, or other locking devices, secure the steering wheels for each piece of equipment such that if the equipment is started, mobility will be limited.
 - 3. Ensure the temporary safety measures are complete before leaving the site limiting access to the new construction and excavations.

3.2 TEMPORARY MEASURES FOR OVERALL CONSTRUCTION SITE

- A. Temporary Chain Link Fencing: Locate the fence around the limits of construction for the current phase of construction providing sufficient room for working in a safe environment meeting all OSHA requirements while minimizing interference with the park operations outside of the new construction. Contact Chesterfield County Department of Parks and Recreation prior to erecting the fence to verify the location will be acceptable. If the construction area cannot be isolated, isolate the unsafe areas per the direction of Chesterfield County.
- B. Traffic Control Signs: Locate the signs up-road in all directions describing the possible dangers and traffic restrictions so a park patron may enter the construction area aware, if passage through the construction area is necessary, or avoid the construction area as necessary.
- C. Traffic Cones: Locate around and throughout the site as necessary to direct traffic away from unsafe areas. If roads need to be blocked off, locate the cones so a vehicle is diverted into a parking lot or another road without having to backup or turn-a-round at the cones.
- D. Wooden Barricades: Locate around and throughout the site as necessary to direct traffic away from unsafe areas. If roads need to be blocked off, locate the cones so a vehicle is diverted into a parking lot or another road without having to backup or turn-a-round at the cones.
- E. Security Personnel: Station near the construction area and/or the equipment so the person(s) may notice someone approaching too close for safety or security reasons.

3.3 OPEN EXCAVATIONS

- A. Isolated Excavations: Applies when the construction area cannot be surrounded by Temporary Chain Link Fence.

SECTION 01141 CONSTRUCTION ACTIVITIES IN A PUBLIC PARK

1. For excavations less than 12 inches deep, surround the excavation with barricade tape before leaving the site.
2. For excavations less than 24 inches deep but greater than or equal to 12 inches deep, surround the excavation with plastic safety fence before leaving the site.
3. For excavations 24 inches deep or greater, surround with temporary chain link fence before leaving the site.

B. Large Excavated Areas: Applies when the construction area cannot be surrounded by Temporary Chain Link Fence.

1. Surround entire excavated area with temporary chain link fence before leaving the site.

3.4 ASPHALT

- A. Schedule placing asphalt so it may be sufficiently cool before the end of the working day.
- B. Locate traffic cones or barricades at each access to the asphalt until it has hardened sufficiently to apply the striping.

3.5 PORTLAND CEMENT CONCRETE

- A. Schedule placing concrete to the early morning so it may become sufficiently hard, resistant to imprinting, before the end of the working day.
- B. Surround all fresh concrete pours with plastic safety fence for at least two days after placing the concrete to restrict pedestrian access on the new concrete.
- C. Locate traffic cones around concrete with nearby vehicle access for at least seven days after placing the concrete to restrict vehicular access on the new concrete.
- D. Starting at the end of the work day, station security personnel near the concrete until it has sufficiently hardened.

3.6 UTILITIES

- A. Do not leave utility trenches open at the end of the day. Schedule the installation so the portion of utility installed may be covered as required per the Contract Documents. The portion of the trench at the end of the utility line installed may remain open and shall be treated as an isolated excavation.
- B. Restrict access into stockpiled pipe greater than 8 inches in diameter using either plastic safety fence or temporary chain link fence. If plastic safety fence is used, secure the fence to the pipe or completely wrap the stockpile so the fence can be fastened to itself.
- C. Wrap all valves, hydrants, and other waterline appurtenances above grade or stockpiled on site with cloth or a tarp at the end of the working day.

3.7 WEEKENDS AND HOLIDAYS

SECTION 01141 CONSTRUCTION ACTIVITIES IN A PUBLIC PARK

- A. Secure all vehicles, construction equipment, stockpiles, and other items relating to the construction using temporary chain link fences, plastic safety fences, chains and locks. Remove all keys, including safety keys, from vehicles and equipment.
- B. Install the temporary chain link fence around the construction area and excavations ensuring the gates are adequately locked. Provide Chesterfield County Department of Parks and Recreation with a key, or combination, to the lock.
- C. Place signs and traffic cones near the construction area re-directing the traffic as necessary.

END OF SECTION 01141

1.0 GENERAL

- A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Owner's Representative will conduct project meetings throughout the construction period as required by the work.
- B. Related Work:: The Contractor's relations with his sub-Contractors and material suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

1.2 QUALITY ASSURANCE:

For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 SUBMITTALS:

- A. Agenda Items: To the maximum extent practicable, advise the Owner's Representative at least 24 hours in advance of the project meetings regarding items to be placed on the agenda.
- B. Minutes:
 - 1. The Owner's Representative will compile minutes of each project meeting, and will furnish one (1) copy to all attendees.
 - 2. Recipients of copies may make and distribute such other copies as they wish.

2.0 EXECUTION**2.1 MEETING SCHEDULE:**

- A. Except as noted below for the Pre-Construction Meeting, project meetings will be held as required by the Owner's Representative.
- B. Coordinate as necessary to establish mutually acceptable schedule for meetings at the convenience of the Owner.

2.2 MEETING LOCATION:

The Owner shall establish the meeting location. To the maximum extent practicable, meetings will be held at the job site.

2.3 PRE-CONSTRUCTION MEETING:

- A. Pre-Construction Meeting will be scheduled to be held no later than 15 working days after the Owner has issued the Notice to Proceed.
 - 1. Provide attendance by an authorized representative of the Contractor and major sub-Contractors.
 - 2. The Owner's Representative will advise other interested parties, and request their attendance.
- B. Minimum Agenda: Data will be distributed and discussed on at least the following items.
 - 1. Organizational arrangement of Contractor's forces and personnel, and those of sub-Contractors, material suppliers, and the Owner's Representative.
 - 2. Channels and procedures for communication.
 - 3. Construction schedule, including sequence of critical work.
 - 4. Contract Documents, including distribution of required copies or original Documents and revisions.
 - 5. Processing of shop drawings and other data submitted to the Owner's Representative for review.

6. Processing of bulletins, field decisions, and change orders.
7. Rules and regulations governing performance of the work
8. Procedures for safety and first aid, security, quality control, housekeeping, and related matters.

C. Pre-Construction Conference Format:

The format of the agenda for the Pre-Construction Conference shall generally be as on the following pages:

PRE-CONSTRUCTION CONFERENCE FORMAT

PRE-CONSTRUCTION CONFERENCE FOR _____

OWNER: _____

PROJECT: _____ JOB ORDER NO.: _____

LOCATION: _____

COM. NO.: _____ TIME: _____ DATE: _____

AGENDA AND MINUTES**1. GENERAL**

- a. Introductions and Registrations of Attendees (sign attached sheet)
- b. Conference Format and Agenda
- c. Agreement, Performance and Payment Bonds and Insurance
- d. Notice to Proceed
- e. Responsibilities of Owner, Contractor, A/E, and Owner's Inspector

2. PROJECT COMMUNICATION AND CORRESPONDENCE

- a. With Contractor:

Field Superintendent will be:

	OFFICE	FIELD	EMERGENCY
Company:	_____	_____	_____
Street:	_____	_____	_____
P.O. Box:	_____	_____	_____
Zip:	_____	_____	_____
Attention:	_____	_____	_____
Telephone:	_____	_____	_____

- b. With Architect/Engineer:

Project Architect/Engineer will be: _____

	OFFICE	FIELD	EMERGENCY
Company:	_____	_____	_____
Street:	_____	_____	_____
P.O. Box:	_____	_____	_____
Zip:	_____	_____	_____
Attention:	_____	_____	_____
Telephone:	_____	_____	_____

- (1) For questions, information, etc., Attention:

In the absence of Mr. _____, if necessary, contact first _____
and second _____.

- (2) For shop drawings and other submittals, use

- (3) Discuss submittals and other points on shop drawings, samples, test data, brochures and other submittals.

c. With Owner:

Inspector will be _____
Agency Coordinator will be _____
Other _____
Project Manager will be _____

- (1) Copies of correspondence
(2) Through Owner's Inspector and A/E
(3) Project Identification

d. With material suppliers and subcontractors

e. Other

3. SCHEDULE, ESTIMATES, CHANGE ORDERS AND TIME EXTENSIONS

- a. Project Schedule: CPM, bar chart, other
b. Schedule of Values (Lump Sum Breakdown) No mobilization shall be paid as a schedule of value item on unsecured contracts.
c. Monthly requests for payment

- (1) Closing date
(2) Format
(3) Preliminary approval by Owner's Inspector and A/E; copy to Agency Coordinator
(4) Work done and materials on hand
(5) Place and projection of materials on hand
(6) Conformance to schedule

d. List of subcontractors and major suppliers

e. Change Orders

- (1) Request for Proposal and Response (To be initiated by the Project Manager)
(2) Acceptance by A/E and Owner
(3) Change Order execution by Contractor, A/E and Owner
(4) Time extension, if any
(5) Not official until fully approved by Contractor and Owner

4. CONSTRUCTION

- a. Manner of conducting the work
b. Construction plant area

- (1) On-site
- (2) Off-site
- (3) Borrow and Spoil
- (4) Disposal of wastes

- c. Project sign(s)
- d. Temporary facilities
- e. Traffic maintenance
- f. Safety--public, on-site, personnel
- g. Layout of the work

- (1) Surveys, site and grading
- (2) Control

- h. Contractor's Quality Control Plan and Owner's Quality Assurance Plan

- (1) Tests - concrete and soils
- (2) Certificates - mfg.
- (3) Construction quality - i.e., line, grade, forms, fencing
- (4) Notice, prior to concrete pours or filling operations

- i. Special notice
- j. Building demolition

5. PROJECT CLOSE OUT

- a. Final cleanup
- b. Guarantees
- c. Punch lists and final inspections
- d. Final payment and required forms
- e. As-built drawings
- f. Assessment of Roles in Construction Project
- g. Other

6. ADDED COMMENTS BY OWNER

7. ADDED COMMENTS BY CONTRACTOR

8. ADDED COMMENTS BY PRINCIPAL SUBCONTRACTORS

9. ADDED COMMENTS BY FEDERAL OR STATE AGENCIES**2.4 PROJECT MEETINGS:****A. Attendance:**

1. To the maximum extent practicable the same person or persons shall represent the Contractor at the project meetings throughout progress of the work.
2. Sub-Contractors, material suppliers, and others may be invited to attend those project meetings in which their aspect of the work is involved.

B. Minimum Agenda:

1. Review, revise as necessary, and approve minutes of previous meetings.
2. Review progress of the work since last meeting, including status of submittals for approval and payment request.
3. Identify problems which impede planned progress.
4. Develop corrective measures and procedures to regain planned schedule.
5. Complete other current business.

C. Revisions to Minutes:

1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
3. Challenge to minutes shall be settled as priority portion of "old business" at the next regularly scheduled meeting.

END OF SECTION

1.0 GENERAL

- A. Provide initial projected construction schedules for entire work, revise monthly. Coordinate schedules of all major sub-contractors.
- B. **Submit updated schedule with each Application for Payment showing actual progress and projected progress to completion date.**

1.1 FORM OF SCHEDULES:

- A. Prepare in form of horizontal bar chart.
 - 1. Provide separate horizontal bar column for each trade or operation.
 - 2. Order: Table of Contents for Project Manual.
 - 3. Identify each column:
 - a. By major specification section number.
 - b. By distinct graphic delineation.
 - 4. Horizontal time scale: Identify year, month and first workday of each week.
 - 5. Scale and spacing: Allow space for updating.
- B. Sheet Size: Minimum 8-1/2" x 14".

1.2 CONTENT OF SCHEDULES:

- A. Provide complete sequence of construction by activity.
 - 1. Shop Drawings, Product Data and Samples:
 - a. Submittal dates of long lead and critical path items.
 - b. Dates reviewed copies will be required to maintain schedule.
 - 2. Product procurement and delivery dates.
 - 3. Dates for beginning, and completion of, each element of construction.
- B. Identify work by logically grouped activities.
- C. Show projected percentage of completion for each item of work as of first day of each month.

1.3 SUBMITTALS:

- A. Submit initial schedules within 14 days after date of Notice to Proceed or by Preconstruction Conference.
 - 1. Owner's Representative will review schedules and return reviewed copy within 7 days after receipt.
 - 2. If required, resubmit within seven days after return of reviewed copy.
- B. **Submit monthly updated schedules accurately depicting progress to first day of each month.**
- C. Submit five prints.

END OF SECTION

1.0 GENERAL**A. Work Included:**

1. Wherever possible throughout the Contract Documents, the minimum acceptable quality of workmanship and materials has been defined either by manufacturer's name and catalog number or by reference to recognized industry standards.
2. To ensure that the specified products are furnished and installed in accordance with the design intent, procedures have been established for advance submittal of design data and for its review and return by the Architect.

B. Related Work Described Elsewhere: Individual submittals required are noted in pertinent Sections of these Specifications.**C. Make all submittals of Product Data, Samples and other similar items, in strict accordance with the provisions of this Section of these Specifications.****D. Any fabrication, installation, or use of any materials and products before the return of approved submittals shall be at the risk of the Contractor.****E. Designate in the Construction Schedule, dates for submission and review time for Product Data and Samples, which will be needed for each product.****1.1 PRODUCT DATA:****A. Manufacturer's Standard Schematic Drawings:**

1. Modify drawings to delete information which is not applicable to Project.
2. Supplement standard information to provide additional information applicable to Project.

B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.

1. Clearly mark each copy to identify pertinent materials, products or models.
2. Show performance characteristics and capacities.

C. Number of Copies Required: Submit the number of copies which are required to be returned plus two copies which will be retained by the Owner's Representative.**1.2 SAMPLES:****A. Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.****B. Office Supplies:** Of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of product or material, with integrally related parts and attachment devices.
2. Full range of color samples.

C. Number of Samples Required: Submit all Samples in the quantity which is required to be returned plus one which will be retained by the Owner's Representative.**1.3 SUBMISSION REQUIREMENTS:****A. General:**

1. Make all submittals in advance of scheduled dates for installation to permit all required time for mail

deliveries, review of at least 8 working days for Owner's Representative, for discussions with Owner and securing necessary approvals, for possible revision and re-submittals, and for policy orders and securing timely delivery.

2. Consecutively number all submittals.
- B. Delays: Costs of delays occasioned by tardiness of submittals will be back charged as necessary and shall not be borne by the Owner.
- C. Accompany Submittals with Transmittal Letter, in Duplicate, Containing:
1. Date.
 2. Project title and number.
 3. Contractor's name and address.
 4. The number of each product data and sample submitted.
 5. Notification of deviations from contract documents.
 6. Other pertinent data.
- D. Submittals Shall Include:
1. Date and revision dates.
 2. Project title and number.
 3. The names of:
 - a. Owner's Representative.
 - b. Contractor.
 - c. Sub-Contractor.
 - d. Supplier.
 - e. Manufacturer.
 - f. Separate details when pertinent.
 4. Identification of product or material.
 5. Relation to adjacent structure or materials.
 6. Field dimensions, clearly identified as such.
 7. Specification Section number.
 8. Applicable standards, such as ASTM number or Federal Specification.
 9. **A blank space, 4" x 3", for the Architect's stamp.**
 10. Identification of deviations from Contract Documents.
 11. **Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.**
- E. Grouping of Submittals:
1. Unless otherwise specifically permitted by the Owner's Representative, make all submittals in groups containing all associated items.
 2. The Owner's Representative may reject partial submittals as not complying with the provisions of the Contract Document.

1.6 RE-SUBMISSION REQUIREMENTS:

Product Data and Samples:

1. Revise initial submittal as required and resubmit as specified.
2. Indicate on drawings any changes which have been made other than those requested by the Owner's

Representative.

1.7 DISTRIBUTION OF SUBMITTALS AFTER REVIEW:

Distribute Copies of Product Data which carry Architect's Stamp, to:

1. Contractor's file.
2. Project site file.
3. Record documents file.
4. Other prime Contractors.
5. Sub-Contractors.
6. Supplier.
7. Fabricator.

1.8 ARCHITECT'S DUTIES:

- A. Review submittals with reasonable promptness.
- B. Review for:
 1. Design concept of project.
 2. Information given in Contract Documents.
- C. Review of separate item does not constitute review of an assembly in which item functions.
- D. Affix stamp and initials or signature certifying to review of submittal.
- E. Return submittals to Contractor for distribution.

END OF SECTION

1.0 GENERAL

- A. Submit to the Owner's Representative a Schedule of Values, at same time Construction Schedule is submitted.
- B. Payment for materials stored on site will be limited to those materials listed in Schedule of Unit Material Values.

1.1 FORM OF SUBMITTAL:

- A. Submit typewritten Schedule of Values.
- B. Use Table of Contents of this specification as basis for format for listing costs of work.
- C. Identify each line item with number and title as listed in Table of Contents of this specification.

1.2 PREPARING SCHEDULE OF VALUES:

- A. Itemize separate line item cost for each of the following general cost items:
 - 1. Performance and Payment Bonds.
 - 2. Field Supervision and Engineering.
 - 3. Temporary job trailer, telephone and fax machine.
 - 4. Submittals, Shop Drawings and Operation and Maintenance Manuals.
- B. Itemize separate line item cost for work required by each Section of this specification.
- C. For each line item which has installed value of more than \$10,000 break down costs to list major products or operations under each item or as minimum cost of labor and materials.
- D. Round off figures to nearest dollar.
- E. Make sum of total costs of all items listed in schedule equal to total Contract Sum.

1.3 PREPARING SCHEDULE OF UNIT MATERIAL VALUES:

- A. Submit separate schedule of unit prices for materials to be stored on which progress payments will be made.
- B. Make form of submittal parallel to Schedule of Values, with each line item identified same as line item in Schedule of Values.
- C. Include in unit prices only:
 - 1. Cost of material.
 - 2. Delivery and unloading at site.
 - 3. Sales taxes.
- D. Make sure that unit prices multiplied by quantities given equal material cost of that item in Schedule of Values.

1.4 REVIEW AND RE-SUBMITTAL:

- A. After review by Owner's Representative, revise and re-submit schedule (and Schedule of Material Values) as required.
- B. Resubmit revised schedule in same manner.

END OF SECTION

1.0 GENERAL**1.1 SCOPE:**

- A. Work Included: Perform all work necessary and required for the construction of the project as indicated. Such work includes but is not limited to the following:
1. Reference specifications and standards.
 2. Inspections and tests.
 3. Schedules and reports.
- B. Related Work in Other Sections: The following item of associated work is included in another section of these specifications:

Tests specifically required in other sections.

1.2 REFERENCE SPECIFICATIONS OR STANDARDS:

- A. Various standards, technical data, and specifications are incorporated in the technical sections of these specifications by reference. In all such instances the reference shall indicate the latest edition including amendment or revision in effect as of that date, unless a specific issue is identified otherwise. At least one copy of all referenced specifications, technical data, and standards shall be maintained in good condition on the site and shall be available to all trades and to the Owner and his representatives throughout the construction period.
- B. In the event that referenced specifications, technical data or standards contain general requirements in conflict with the General or Supplementary General Conditions, or the scope of work of individual sections of these specifications, the provisions of these specifications shall govern.
- C. A partial list of organizations publishing specifications, technical data, or standards normally referenced in technical sections of these specifications, together with the official abbreviation therefore, follows:

<u>Abbrev.*</u>	<u>Organization</u>
ACI	American Concrete Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute, Inc.
ASTM	American Society for Testing and Materials
NAAMM	National Association of Architectural Metal Manufacturers
NBFU	National Board of Fire Underwriters
NEC	National Electric Code of NBFU
NEMA	National Electrical Manufacturers' Association
NFPA	National Fire Protection Association
SSPC	Structural Steel Painting Council
UL	Underwriters' Laboratories, Inc.
VDOT	Virginia Department of Transportation
AASHTO	American Association of State Highways and Transportation

* References to other organizations are included in some other sections of the specifications.

2.0 PRODUCTS:

(Not Applicable)

3.0 EXECUTION:

3.1 **INSPECTIONS, TESTS AND EXPEDITING:**

- A. The Owner, the Contract Administrator and his representatives, or either alone, shall be allowed access to the Contractor's shops and those of the Contractor's suppliers to observe the work and workmanship and to obtain desired information. The Contractor shall furnish to the Owner's representative, if so requested, at no additional cost, shop and mill test reports when specified. The Contractor shall inform the Owner's Representative of progress of the work and shall give the Owner's Representative ample advance notice of appropriate times for inspections and tests. Specified tests may be observed by the Owner and may be subject to his approval. When specific inspections or tests are required, the work involved shall not proceed beyond that point until the Owner has made or waived such inspections or tests.
- B. When State codes or laws require approval or inspection of the drawings or equipment before installation or operation, it shall be the Contractor's responsibility to obtain such approval and to submit one signed original and three copies of the approval for the Owner's records.
- C. The Owner has the right to inspect any material or equipment at any stage of development or fabrication. Such inspection will not release the Contractor from responsibility or liability with respect to such material or equipment, or with respect to conforming with the requirements of the Contract Documents.
- D. **The Owner will retain and pay an independent testing laboratory, to perform the following inspections, testing, engineering, and associated services, as required by other sections of the specifications. These tests performed will be used to verify that the work conforms to the requirements of the specifications. Such tests are not intended to provide the Contractor with the information required by him for the proper execution of the work and their performance shall not relieve the Contractor of the necessity to perform his own tests for that purpose.**
 - 1. Laboratory Tests: The Contractor shall furnish all sample materials required for tests and shall deliver same without charge to the Testing Laboratory or other designated agency when and where directed by them.
 - 2. Soils: Inspect and test excavations, type of material, placement, and compaction of fills.
 - 3. Aggregates: Inspect type, placement and compaction of crushed stone fills.
 - 4. Concrete:
 - a. Inspect forms and reinforcement.
 - b. Inspect placement.
 - c. Witness Contractor's slump tests and making of cylinder samples.
 - d. Perform seven (7) and twenty-eight (28) day tests on specimen cylinders.
 - 5. Reports: Prepare inspection and test reports and forward three copies to each of the Contract Administrators.
 - 6. Miscellaneous: Perform any additional inspections or tests required by the legal authorities having jurisdiction.
 - 7. The cost of retesting due to deficient workmanship or materials shall be paid by the Contractor.
- E. When the Contractor's work will require inspection or testing, the Contractor shall notify the Owner three days in advance of such required tests or inspections. The Contractor shall cooperate with the testing laboratory's representatives by giving ample notice of the time, locations, and extent of work to be inspected or tested, by performing concrete slump tests, preparing concrete and other samples as instructed, and by providing necessary facilities at the project site or in the shop for the testing agency.
- F. Failure of any material to pass the specified tests will be sufficient cause for refusal to consider, under this Contract, any further samples of the same brand or make of that material.
- G. Test samples, as the Owner may deem necessary, will be procured from the various materials or equipment delivered by the Contractor for use in the work. If any of these test samples fail to meet the specification requirements, any previous approval will be withdrawn and such materials or equipment shall be subject to removal and replacement by the Contractor with materials or equipment meeting the specification requirements,

or, at the discretion of the Owner, the defective materials or equipment may be permitted to remain in place subject to a proper adjustment of the contract price.

END OF SECTION

1.0 GENERAL

- A. Work Included: Temporary construction facilities and controls required for this work include, but are not necessarily limited to:

1. Temporary utilities such as water and electricity;
2. Storage sheds;
3. Sanitary facilities;
4. Enclosures such as tarpaulins, barricades, and canopies;
5. Temporary heat, storage and coverings;
6. Temporary Telephone.

- B. Related Work Described Elsewhere:

Compliance with Safety Regulations: Compliance with all requirements of pertinent regulations is described in the General Conditions of the Contract.

1.1 PRODUCT HANDLING:

- A. Protection: Use all means necessary to maintain temporary facilities and controls in proper and safe condition throughout progress of the work.
- B. Replacement: In the event of loss or damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

1.2 TEMPORARY UTILITIES:

- A. General: Obtain and pay all cost for all water and electricity required for the performance of the work.
- B. Temporary Piping: Furnish and install all necessary temporary piping and, upon completion of the work, remove and dispose of all such temporary piping.
- C. Temporary Electricity:
1. Furnish and install all necessary temporary wiring and associated equipment.
 2. Furnish and install area distribution boxes so located that the individual trades may use their own construction-type extension cords to obtain proper power and artificial lighting at all points where required by inspectors and for safety.

1.3 SANITARY FACILITIES:

Furnish and install all required temporary toilet buildings with sanitary toilets for use by all personnel. Comply with all minimum requirements of all public agencies having jurisdiction. Maintain in a sanitary condition at all times.

1.4 ENCLOSURES:

Furnish, install and maintain for the duration of construction required scaffolds, tarpaulins, barricades, canopies, warning signs, steps, bridges, platforms, and other temporary construction necessary for proper completion of the work in compliance with all pertinent safety and other regulations.

1.5 TEMPORARY COVERINGS:

Finished surfaces, including factory-finished and job finished items shall be clean and not marred upon delivery of facility to Owner. Contractor shall without extra compensation, refinish such where surfaces prove to have been inadequately protected, and are damaged.

1.6 TEMPORARY TELEPHONE:

Contractor shall maintain at his own expense, a job telephone for duration of the Contract. Both local and long-distance calls shall be paid for by the Contractor. It shall be the Contractor's responsibility to collect for any long-distance calls made by persons other than those in his own organization.

1.7 REMOVAL:

Maintain all temporary facilities and controls as long as needed for the safe and proper completion of the work. Remove and dispose of all such temporary facilities and controls as rapidly as progress of the work will permit or as directed by the Owner's Representative.

END OF SECTION

1.0 GENERAL**A. OWNER'S REPRESENTATIVE'S APPROVAL REQUIRED:**

1. The Contract is based on the materials, equipment, and methods described in the Contract Documents.
2. The Owner's Representative will consider proposals for substitution of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data and all other information required by the Owner's Representative to evaluate the proposed substitution.

B. "OR EQUAL":

1. Where the phrase "or equal" or "or approved equal" occurs in the Contract Documents, do not assume that material, equipment, or methods will be approved as equal by the Owner's Representative unless the item has been specifically approved for this work by the Owner's Representative.
2. The decision of the Owner's Representative shall be final.

C. AVAILABILITY OF SPECIFIED ITEMS:

1. Verify prior to Bidding that all specified items will be available in time for installation during orderly and timely progress of the work.
2. In the event specified item or items will not be so available, so notify the Owner's Representative [5] days prior to receipt of Bids.
3. Costs of delays because of non-availability of specified items, when such delays could have been avoided by the Contractor, will be back charged as necessary and shall not be borne by the Owner.

1.1 CONTRACTOR'S OPTIONS:

- A. For products specified only by reference standards, select any product meeting standards, by any manufacturer.
- B. For products specified by naming several products or manufacturers, select any product and manufacturer named.
- C. For products specified by naming one or more products, but indicating the option of selecting equivalent products by stating "or equal" or "or approved equal" after specified product, Contractor must submit request, as required for substitution, for any product not specifically named.

1.2 SUBSTITUTIONS:

- A. During Bidding, Owner's Representative will consider written requests from prime bidders for substitutions, received at least five days prior to bid date. Unless otherwise stated in other sections, requests after that time will not be considered.
- B. Within thirty days after date of Contract, Owner's Representative will consider formal requests from Contractor for substitution of products in place of those specified.
- C. Submit five copies of request for substitution. Include in request:
 1. Complete data substantiating compliance of proposed substitution with Contract Documents.
 2. For products:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature
 - (1) Product description
 - (2) Performance and test data
 - (3) Reference standards

- c. Samples.
 - d. Name and address of similar projects on which product was used, and date of installation.
 - 3. For construction methods:
 - a. Detailed description of proposed method.
 - b. Drawings illustrating methods.
 - 4. Itemized comparison of proposed substitution with product or method specified.
 - 5. Data relating to changes in construction schedule.
 - 6. Relation to separate contracts.
 - 7. Accurate cost data on proposed substitution in comparison with product or method specified.
- D. In making request for substitution, Bidder/Contractor represents:**
- 1. He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.
 - 2. He will provide the same guarantee for substitution as for product or method specified.
 - 3. He will coordinate installation of accepted substitution into work, making such changes as may be required for work to be complete in all respects.
 - 4. He waives all claims for additional costs related to substitution which consequently becomes apparent.
 - 5. Cost data is complete and includes all related costs under his contract, but excludes:
 - a. Cost under separate contracts.
 - b. Owner's Representative's redesign.
- E. Substitutions will not be considered if:**
- 1. They are indicated or implied in Shop Drawings or Project Data submitted without formal request submitted in accordance with Section 01340, Product Data and Samples.
 - 2. Acceptance will require substantial revision of Contract Documents.
- F. The cost of any change, either in construction and/or research, and design by the Architect, necessary to accommodate any substitution, will be borne by the Contractor, in full.**

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:**

- A. Work Included: Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this section.
- B. Related Work: Additional procedures also may be prescribed in other sections of these specifications and the "General Conditions."

1.2 QUALITY ASSURANCE:

Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.3 MANUFACTURER'S RECOMMENDATIONS:

Except as otherwise approved by the A/E, determine and comply with the manufacturer's recommendations on product handling, storage and protection.

1.4 PACKAGING:

- A. Deliver products to the job site in the manufacturer's original container, with labels intact and legible.
 - 1. Maintain packed materials with seals unbroken and labels intact until time of use.
 - 2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.
- B. The A/E may reject as non-complying such material and products that do not bear identification satisfactory to the A/E as to manufacturer, grade, quality, and other pertinent information.

1.5 PROTECTION:

- A. Protect finished surfaces, including jams and soffits of opening used as passageways, through which equipment and materials are handled.
- B. Provide protection for finished floor surfaces in all areas prior to allowing equipment or materials to be moved over such surfaces.
- C. Maintain finished surfaces clean, unmarred, and suitably protected until the work is accepted by the Owner.

1.6 REPAIRS AND REPLACEMENTS:

- A. In the event of damage, promptly make replacements and repairs to the approval of the A/E and at no additional cost to the Owner.
- B. Additional time required to secure replacements and to make repairs will not be considered by the A/E to justify an extension in the contract time of completion.

1.7 DELIVERY AND STORAGE:

The Contractor shall be responsible for making all arrangements for the delivery, unloading, receiving, and storage of materials. The Owner shall not assume any responsibility for receiving, storage or unloading of shipments.

END OF SECTION

1.0 GENERAL**1.1 GUARANTEE AND BONDS:**

Before date scheduled for final inspection of the work the Contractor shall secure Certificates of Inspection, Guarantees and Bonds covering the items and work specified and of all substitutions and deliver all Certificates, Guarantees, and Bonds to the Owner's Representative. All data shall be submitted in duplicate.

1.2 MAINTENANCE AND OPERATIONAL MANUALS:

Submit complete manual for all systems incorporated into the work, in duplicate. Requirements for this contract: Plant material maintenance and care procedures for the warranty period.

1.3 PREPARATION OF PUNCH LIST:

- A. When the project is substantially complete, the Contractor shall notify the Owner's Representative in writing. The Owner's Representative shall then make a detailed observation of the entire project and prepare an itemized punch list of all work remaining to be completed, items missing and all work and materials that are defective and to be replaced.
- B. This punch list will then be submitted to the Contractor for necessary action.
- C. The omission of any item on the punch list shall not relieve the Contractor of his responsibility for the item, under terms of the Contract.

1.4 FINAL INSPECTION:

The Contractor, after having completed all items and work noted in the punch list will then notify the Owner's Representative, in writing, that the work has been completed and the project is then ready for final inspection. All items and work as listed will then be reinspected and comment or final approval will be made at that time.

1.5 RELEASE OF LIENS:

Prior to release of final payment or reduction of percentage of retainage the Contractor shall submit to the Owner's Representative in duplicate and properly executed, a release of liens per General Conditions and Amendments.

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:**

- A. Work Included: Throughout the construction period, maintain the project in a standard of cleanliness as described in this section.
- B. Related Work: In addition to standards described in this section, comply with the requirements for cleaning as described in pertinent other sections of these specifications and the "General Conditions."

1.2 QUALITY ASSURANCE:

- A. Conduct daily inspection, and more often if necessary, to verify that requirements for cleanliness are being met.
- B. In addition to the standards described in this section, comply with pertinent requirements of government agencies having jurisdiction.

2.0 PRODUCTS**2.1 CLEANING MATERIALS AND EQUIPMENT:**

Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.2 COMPATIBILITY:

Use only cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

3.0 EXECUTION**3.1 PROGRESS CLEANING:****A. General:**

- 1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
- 2. Do not allow accumulation of scraps, debris, waste material, and other items not required for construction of this work.
- 3. At least once per week, and more often if necessary, completely remove all scraps, debris, and waste materials from the job site.
- 4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection, and protection of the environment.

B. Site:

- 1. Weekly, and more often if necessary, inspect the site and pick up all scraps, debris, and waste material. Remove such items to the place designated for their storage.
- 2. Maintain the site in a neat and orderly condition at all times.

3.2 FINAL CLEANING:

- A. "Clean," for the purpose of this article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

- B. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scraps, debris, and waste. Conduct final progress cleaning as described in Article 3.1 above.
- C. Schedule final cleaning as approved by the A/E to enable the Owner to accept a completely clean work.

3.3 CLEANING DURING OWNER'S OCCUPANCY:

Should the Owner occupy the work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning shall remain the responsibility of the Contractor for that portion of the work not occupied by the Owner.

END OF SECTION

1.0 GENERAL**1.1 MAINTENANCE OF DOCUMENTS:**

- A. Maintain at project site, one copy of the following:
 - 1. Contract Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Reviewed Submittals
 - 5. Change Orders
 - 6. Other Modifications to Contract
 - 7. Field Test Records
- B. Label each document "Project Record".
- C. Maintain documents in clean, dry, legible condition. Store documents in approved location, apart from documents used for construction. Do not use record documents for construction purposes.
- D. Make documents available at all times for inspection by Owner's Representative.

1.2 RECORDING:

- A. Keep record documents current.
- B. Do not permanently conceal any work until required information has been recorded.
- C. Record Drawings shall be legibly marked with pen to record actual construction:
 - 1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - 2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - 3. Depth of footings.
 - 4. Changes made by change order, field order, or supplemental instructions.
 - 5. Details not on original contract drawings.
- D. Specifications and Addenda shall be legibly marked up by section to record:
 - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by change order, field order, or supplemental instructions.
 - 3. Other matters not originally specified.

1.3 SUBMITTAL:

- A. At completion of the project, deliver Record Documents to Owner's representative.
- B. Accompany submittal with transmittal letter containing:
 - 1. Date
 - 2. Project title and number
 - 3. Contractor's name and address
 - 4. Title and number of each Record Document
 - 5. Certification that each document as submitted is complete and accurate
 - 6. Signature of Contractor or his authorized representative

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:****A. Work Included:**

To aid the continued instruction of operating and maintenance personnel, and to provide a positive source of information regarding the products incorporated into the work, furnish and deliver the data described in this section and in pertinent other sections of these specifications.

B. Related Work:

Required contents of submittals also may be amplified in pertinent other sections of these specifications and the "General Conditions."

1.2 QUALITY ASSURANCE:

In preparing data required by this section, use only personnel who are thoroughly trained and experienced in the operation and maintenance of the described items, completely familiar with the requirements of this section, and skilled communicating the essential data.

1.3 SUBMITTALS:

Unless otherwise directed in other sections, or in writing by the A/E, submit three copies of the final manual to the A/E for approval prior to indoctrination of operation and maintenance personnel.

2.0 PRODUCTS**2.1 INSTRUCTION MANUALS:**

A. Where instruction manuals are required to be submitted under other sections of these specifications, prepare in accordance with the provisions of this section.

B. Format:

1. Size: 8-1/2" X 11"
2. Paper: White bond, at least 20 lb weight.
3. Text: Typed (Hand printed or written is not acceptable)
4. Drawings: 11" X 8 " preferable; bind in with text; foldouts are acceptable; larger drawings are acceptable if folded to fit within the manual and provide a drawing pocket inside rear cover or bind in with text.
5. Fly Sheets: Separate each portion of the manual with neatly prepared Fly Sheets or tabbed index sheets briefly describing the contents of the ensuing portion. Fly Sheets or index tabs may be in color.
6. Binding: Use heavy-duty plastic covers with binding mechanism concealed inside the manual; 3-ring binders or GBC binding is acceptable. All binding is subject to the A/E's approval.

C. Provide front and back covers for each manual, using durable plastic material approved by the A/E, and clearly identified on the front cover with at least the following information:

OPERATING AND MAINTENANCE INSTRUCTIONS

FOR

(Item/system name and description)

(Name and address of Contractor and sub-Contractor)

(General subject of this manual)

(name and address of A/E) (A/E's approval and date approved)

D. Contents:

1. Neatly prepared and typewritten detailed table of contents.
2. Complete instructions regarding operation and maintenance of all equipment involved including lubrication, disassembly, and reassembly.
3. Complete nomenclature of all parts of all equipment.
4. Complete nomenclature and part number of all replaceable parts, name and address of nearest vendor, and all other data pertinent to procurement procedures.
5. Copy of all guarantees and warranties issued.
6. Manufacturer's bulletin, cuts, and descriptive data, where pertinent, clearly indicating the precise items included in this installation and deleting, or otherwise clearly indicating, all manufacturers' data with which this installation is not concerned.
7. Such other data as required in pertinent sections of these specifications.

3.0 EXECUTION

3.1 INSTRUCTION MANUALS:

A. Final Manuals:

1. Complete the Manuals in strict accordance with the specifications and the A/E's review comments.
2. Provide separate manual for (1) Athletic Lighting, (2) Irrigation System. All other items shall be included in the General Construction Manual.

B. Revisions:

Following the indoctrination and instruction of operation and maintenance personnel, review all proposed revisions of the Manual with the A/E.

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:**

Work Included: Erosion and sediment control operations and devices required for this work are indicated on the drawings and include, but are not necessarily limited to:

- A. Sequence of control devices installation;
- B. Installation of control devices;
- C. Maintenance of control devices;
- D. Temporary forms of stabilization;
- E. Removal of devices and site restoration.

1.2 STANDARDS:

The following codes and standards, latest edition, form a part of this specification, to the extent of all provisions applicable to the work required for this project, and as specifically referenced herein.

- A. All work shall comply with Virginia Erosion and Sediment Control Handbook, Third Edition (1992) and as amended by local codes and regulations.
- B. VDOT Specifications are those contained in the latest Edition of the Virginia Department of Transportation, Road and Bridge Specifications.

1.3 PROTECTION:

- A. Use all means necessary to protect all materials incorporated into the work of this section before, during and after installation. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's representative and at no additional cost to the Owner.
- B. Maintain and protect all bench marks, monuments and similar reference points and, if they are displaced or destroyed by these operations, replace same as directed at no additional cost to the Owner.

1.4 PERMITS:

Certificates, permits and all fees required shall be in accordance with the General and Supplemental Conditions. The value of the erosion and sediment control work to include maintenance and all seeding of disturbed areas shall be included in the overall project performance bond.

2.0 PRODUCTS

(Not Applicable)

3.0 EXECUTION**3.1 GENERAL REQUIREMENTS:**

- A. Notify the Owner's Representative 48 hours before placing any erosion control device.
- B. Limit grading to only those areas involved in current construction activities. Limit length of time for exposure of unprotected graded areas. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant (undisturbed) for longer than 30 days.

- C. **Sedimentation control devices shall be constructed prior to the commencing of earth movement to prevent siltation or pollution of areas adjacent to the project.** Construction of the devices shall agree with the details shown on the plan subject to modifications thereof that the Owner's representative deems advisable. They shall remain in place until all surfaces within the project are stabilized such that siltation will not occur with all areas upstream of the control devices having vegetation established, or mulch or pavement in place.
- D. The Contractor agrees to hold the Owner or any of its agents harmless from any and all liability or damage that may arise of a violation of the siltation ordinance and agrees to indemnify them against any loss.

3.2 **NARRATIVE:**

- A. Description: The work of this project involves clearing, grading drainage, paving, water and septic utilities, seeding and other site work for the construction of ball fields, walks, roads, parking areas, lighting and a masonry building.
- B. Dates of Construction: The project is scheduled to start in the spring of 1999 and be completely stabilized by the fall of 1999.
- C. Soil Data: The following soils are shown on the drawings. The extent and descriptions of the soils are based on information from the Soil Survey of Chesterfield County, Virginia, published by the United States Department of Agriculture Soil Conservation Service.

82B Kempsville-Bourne complex, 2 to 6 percent slopes

The complex consists of 45% Kempsville sandy loam, 40% Bourne fine sandy loam, and 15% other soils. It is found on broad, convex ridge tops. Runoff is medium; the erosion hazard is moderate where soils are disturbed and exposed. The complex is well-suited to farming, typically with a seasonal high water table of 18-32 inches. Drainage, as well as lime and fertilizer applications are often necessary, depending on the crops selected.

92B/C Rumford loamy fine sand, 2 to 6 percent slopes/6 to 12 percent slopes

The series consists of deep, somewhat excessively drained, gently sloping and sloping soils on Coastal Plain uplands. These soils have a dominantly loamy subsoil and are formed in Coastal Plain sediment. The surface layer is often dark grayish brown loamy fine sand about 10 inches deep. The subsoil is about 30 inches thick, consisting of varying friable sandy loams and loamy fine sands. Rumford soils are typically strongly to very strongly acidic, low in organic matter, and low in natural fertility. Depending on the slope, the series is found on convex ridge tops and side slopes. Runoff is medium to rapid, increasing with slope and cover. Rumford soils, if adequately limed and fertilized, are well suited to most locally grown crops.

- D. Tree Protection: Trees to remain within the work areas and along perimeter of construction shall be protected as required on the Site Plan and the Erosion Control Details and Specifications sheet to prevent soil compaction, root, trunk and branch injury and/or dismemberment. Tree protection fencing shall be erected no closer to trunks than that shown on the plans.
- E. Erosion Control Program:
 - 1. Maintain sheet flow storm water patterns during construction and provide sediment trapping devices as shown on the plans.
 - 2. Temporary stabilization and permanent seeding shall be applied as noted in 3.1, "GENERAL REQUIREMENTS." Erosion control devices shall be installed as detailed and specified on the drawings and in the specifications.
- F. Sediment Control Program:

Control will be exercised through sequence of land disturbing operations, limiting duration of exposure of unstabilized areas and installation and maintenance of physical control devices coordinated with sequence of construction. Devices used are shown on the drawings and include, but are not limited to, the following:

SECTION 02070 - EROSION AND SEDIMENT CONTROL

#10583

1. Temporary Gravel Construction Entrance
2. Silt Fence with Gravel Weirs
3. Inlet Protection
4. Culvert Inlet Protection
5. Sediment Traps
6. Outlet Protection
7. Diversion Dikes

G. Sequence of Land Disturbing Activities: All applicable mechanical controls are to be constructed as the first item of work. See plan sheets for more detailed sequence of control devices and construction activities.

1. Temporary Gravel Construction Entrance
2. Silt Fence with Gravel Weirs prior to clearing and grubbing
3. Sediment Trap and Diversion Dikes as earthwork proceeds
4. Inlet and Outlet Protection, including Culvert Inlet Protection.
5. Rock Check Dams

Retain control devices until final stabilization of all areas or as directed by Owner's Representative.

H. Maintenance Program: All control measures are to be inspected daily by the site superintendent or his representative. Any damaged structure should be repaired by the close of the day. Inlet protection devices and siltation fencing should be cleaned at 50% capacity and spread on-site where practical. Control structures shall not be removed until all areas above have been finally stabilized and seeded areas established. No control shall be removed without the Owner's Representative prior approval.

END OF SECTION

1.0 GENERAL

1.1 **SCOPE:** Provide all labor, equipment, materials and maintenance to properly complete the work indicated on the drawings and as specified herein. The work includes but is not limited to the following:

- A. Removal of miscellaneous items;
- B. Felling of trees, removal of stumps, limbs, roots and tree debris;
- C. Removal of scrub growth and other vegetation from within the limits of work;
- D. Removal of other unclassified debris;
- E. Protection of trees and other vegetation to remain.

1.2 DEFINITIONS:

- A. The term "clearing" as used herein includes removal of existing objects down to the existing ground level.
- B. The term "grubbing" as used herein includes removal of existing objects beneath ground level.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

- A. Erosion and Sediment Control;
- B. Earthwork;
- C. Finish Grading and Seeding.

1.4 SITE CONDITIONS:

- A. The Contractor shall be deemed to have inspected the site and satisfied himself as to existing conditions under which the work is to be performed prior to commencing his work under this section.
- B. **On-site burning will be permitted provided Contractor meets specific requirements set forth by Chesterfield County and allied State and Federal Agencies having jurisdiction of burning operations.**

1.5 PROTECTION:

- A. Provide the protection necessary to maintain all bench marks, monuments and other reference points, replacing as directed, any such items disturbed or destroyed by any operations under this section of work.
- B. Provide protection for existing trees designated to remain in place and to protect existing objects designated to remain both during and after operations.

1.6 SPILLAGE OF REMOVED MATERIALS:

Trucks removing materials from the site shall not be loaded to the extent that spillage may occur on the roads or highways. Should any spillage occur, this Contractor shall be required to clean the affected areas to the satisfaction of the Owner's Representative and any regulatory agency having jurisdiction.

2.0 PRODUCTS

(Not Applicable)

3.0 EXECUTION**3.1 PREPARATION:**

- A. Site Inspection:
 - 1. Prior to all work of this section, carefully inspect the site and all objects designated to be removed and to be preserved.
 - 2. Locate all existing active utility lines traversing the site and determine the requirements for their protection.

B. Clarification:

1. The drawings do not purport to show all objects existing on the site.
2. The contractor shall flag or otherwise designate those areas to be cleared and grubbed as represented on the drawings before commencing the work in this section.
3. After field location the Contractor shall verify with the Owner's Representative all objects to be removed and all objects to be preserved.

C. Scheduling:

1. Schedule all work in a careful manner with all necessary consideration for the public.
2. Avoid interference with the use of, and passage to and from, adjacent buildings and facilities.

D. Protection of Utilities: Preserve in operating condition all active utilities traversing the site.**E. Erosion and sediment control measures as specified in these specifications shall be provided as required prior to the execution of work under this section.****3.2 CLEARING AND GRUBBING:****A. Tree Removal:**

1. Remove all trees and tree stumps in the areas of clearing, unless designated to remain, together with the bulk of the roots.
2. In all holes created by tree removal, fill with clean soil and then compact to the density of surrounding natural soils.
3. Do not backfill holes until inspected and approved by the Owner's Representative.

B. Grubbing: Remove all surface rocks and all stumps, roots and other vegetation, and all debris within the limits of construction.**C. Debris Removal: Remove all surface debris from the site and dispose of all removed material legally. Leave the site in a neat and orderly condition to the approval of the Owner's Representative.****3.3 PROTECTION OF PERIMETER TREES TO REMAIN:**

- A. Trees having a diameter greater than six inches and which are on or within ten feet of the limits of construction or limits of clearing shall be protected unless directed to be removed by the Owner's Representative.
- B. The Contractor shall be responsible for the protection of tops, trunks, root, and rooting areas of trees that are to remain. Those subject to construction damage shall be protected by temporary fencing as noted in Section 02070 and on the plans; no standing water, stockpiles of any material, or construction activity shall be permitted within branch spread of trees. No construction traffic or parking is permitted within a protected area.
- C. Dead branches and limbs interfering with the construction shall be removed without injury to the trunks and the scars painted with an approved tree wound paint immediately. Any tree damaged by operations under this contract shall be repaired to the satisfaction of the Owner's Representative by competent tree surgeons satisfactory to the Owner, at the Contractor's expense.
- D. The Contractor shall provide treatment for roots over 1 1/2" diameter that are cut during construction operations. Coat the cut faces with an emulsified asphalt, or other acceptable coating, especially formulated for horticultural use or damaged plant tissues. Provide earth cover within 24 hours. Should over 1/3 of tree root system require repair, the Contractor shall also prune and treat an equal amount to the above-ground limb structure, done so that the natural shape of the plant species is retained.

E. When so required, trees shall be felled toward the center of the area being cleared to prevent damage to trees

which are to left standing. When necessary to prevent injury to structures, or other trees or property, or to minimize danger to traffic, trees shall be cut in sections from the top downward.

- F. Any trees designated to remain which are damaged beyond repair due to the Contractors operations shall be grubbed and removed at the Contractor's expense, and replaced by a tree of similar character as specified by the Owner and according to the schedule below. Replacement shall occur during the next planting season from the time of damage.

The schedule for replacement of trees shall be as follows:

Existing Tree Size (Caliber)	Replacement Tree Size (Caliber)
3 - 4"	1 1/2 - 2" *
4 - 5"	1 1/2 - 2" *
5 - 6"	1 1/2 - 2" *
6 - 7"	2 - 2 1/2"
7 - 8"	2 - 2 1/2"
8 - 10"	2 1/2 - 3"
10 - 12"	3 - 3 1/2"
12 - 15"	3 - 3 1/2"
15 - 18"	3 - 3 1/2"
18 - 24"	3 1/2 - 4"
24 - 30"	4 - 4 1/2"
30" +	4 1/2 - 5"

* Or height equivalent to this caliber when material specified is designated in a manner other than caliber

END OF SECTION

1.0 GENERAL

1.1 **SCOPE:** Provide all labor, equipment, maintenance and materials to fully and properly complete the work indicated on the Drawings or specified herein. Unless specified otherwise in this section, the work includes, but is not limited to the following:

- A. Removal of existing masonry dugouts, curbs, gutters, fencing, drainage structures and miscellaneous site items and appurtenances within the contract limit lines, as indicated on the drawings.
- B. Removal of asphalt and concrete paving in locations noted on the drawings.

1.2 RELATED SITEWORK SPECIFIED ELSEWHERE:

- A. Erosion Control
- B. Clearing and Grubbing
- C. Earthwork
- D. Site Drainage

1.3 SUBMITTALS:

- A. Demolition Schedule

1.4 SCHEDULE:

The General Contractor shall, before commencing work, after conference with the Owner and Owner's Representative, submit for approval to the Owner's Representative and Owner a complete schedule and plan of action for accomplishing the work. This plan and schedule shall be strictly adhered to by the General Contractor except where prior arrangements are made with the Owner's Representative (with the Owner's approval). The Owner's representative shall be advised by the Contractor 72 hours prior to changing the schedule and plan of action.

1.5 MATERIAL HANDLING:

- A. Remove salvage and debris from the site as it accumulates. Do not store, sell, burn or otherwise dispose of debris on the site. Remove all materials in such a manner as to prevent spillage. Keep all pavements and areas adjacent to and leading from the site clean and free of mud, dirt and debris at all times.
- B. Wet down the site and areas being demolished as required to prevent airborne dust and dirt.

1.6 JOB CONDITIONS:

- A. Explosives: The use of explosives will not be permitted.
- B. Traffic: Conduct demolition operations and the removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.
- C. Protections: Provide passageways to ensure the safe passage of persons around the area of demolition. Conduct operations to prevent damage to adjacent buildings, structures, and other facilities as well as persons. Demolition work shall be carried on in a manner that will insure the safety of adjacent property, property which is occupied, and persons occupying such property against all damages and injuries which might occur from any cause, and so as not to interfere with the use of adjacent buildings and structures or the free and safe passage to and from same.

Take every precaution to guard against movement or settlement of adjacent buildings, sidewalks and streets. Provide and place at Contractor's own expense, all necessary bracing and shoring in connection

with demolition work, and be solely and entirely responsible for the complete safety and support of such construction.

Protect all walks, roads, streets, curbs, pavements, on or off the premises, and repair and replace or otherwise make good all damage.

- D. Utility Services: Maintain existing utilities indicated to remain. Keep in service and protect against damage during demolition operations.

2.0 PRODUCTS
(Not Applicable)

3.0 EXECUTION

3.1 GENERAL PROVISIONS AND TITLE TO BUILDING STRUCTURES:

- A. Erect and maintain barriers, screens and temporary partitions necessary to protect adjacent areas from dust, damage or accumulation of debris.
- B. No right, title, property or interest of any kind whatsoever in or to land or premises upon which such buildings, utility lines or structures stand, shall be assigned, conveyed, granted or transferred to the Contractor or any other persons, except only the license and right of entry to remove those portions as indicated.
- C. Property belonging to Public Bodies or Public Service Companies, unless abandoned by such companies, shall not become the property of the Contractor by reason of transfer herein provided for and the Owner does not warrant title to any such property.
- D. All salvage and materials become the property of the Contractor, except as otherwise specified.
- E. Materials left on the site after acceptance of the work by the Owner shall be deemed to have been abandoned by the Contractor to the Owner, without prejudice to any claims which the Owner may have against the Contractor arising from the action of the Contractor in so leaving such materials on the site.

3.2 UTILITIES:

Protection: Preserve in operation all active utilities, i.e., water lines, sanitary storm sewers traversing areas to be demolished. Repair damage to any such utility, due to work under this Section, to the satisfaction of utility concerned and the Owner. Verify previous disconnections in area.

3.3 PROTECTION FOR EXISTING TREES:

Exercise care to protect existing trees not shown to be removed. Avoid soil compaction within the drip line of the tree, and avoid injury to roots, trunk, or branches. Reference to Section 02102; Clearing and Grubbing, paragraph 3.3.

END OF SECTION

1.0 GENERAL

- 1.1 SCOPE:** Provide all labor, materials, equipment and maintenance to fully and properly complete the work indicated on the drawings and specified herein. Unless specified otherwise in this Section, the work includes, but is not limited to the following:

- A. Stripping of surface soils
- B. Structural fill and compaction
- C. Excavation
- D. Subgrade preparation
- E. Filling and backfilling
- F. Dewatering as required
- G. Shoring, bracing, sheathing as may be required

1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Erosion Control
- B. Site Drainage
- C. Finish Grading and Topsoiling
- D. Bituminous Concrete Paving
- E. Site Cast-In-Place Concrete
- F. Site Utilities
- G. Subsurface Investigations

1.3 STANDARDS:

The following codes and standards, latest edition, or as noted, form a part of this specification, to the extent of all provisions applicable to the work required for this project, and as specifically referenced herein.

- A. All work shall comply with the VUSBC and with all applicable local codes and regulations (latest Edition).
- B. ASTM Specifications are those contained in the latest edition of the Standards of the American Society for Testing and Materials.
- C. VDOT are those contained in the Virginia Department of Transportation Road and Bridge Specifications, latest edition.

1.4 SOILS INSPECTION, ENGINEERING, AND TESTING:

- A. The services of a Soils Engineer will be furnished by a fully qualified independent testing laboratory or firm of inspection engineers to be retained and paid for by the Owner. The Contractor shall pay for all additional testing required when the original work is rejected. All arrangements for the testing work shall be made by the Contractor, and whenever inclement weather does not provide suitable testing conditions, or the Contractor is not ready for testing, the Contractor shall be responsible for cancellation notice to the testing agency. **The Soils Engineer shall have control over the earthwork operation to the extent required to secure a stable subgrade in accordance with the required density and issue the written statement for conformance to the specifications as previously indicated.** Cooperate with Owner's independent testing firm in all ways such as to assist in data gathering, testing, schedules and site access and sample taking and storage.
- B. As a minimum, the Soils Engineer's Services Shall Include:
 - 1. The Soils Engineer shall witness removal of unsuitable subgrade materials (undercut), and proof rolling of subgrade.
 - 2. Prior to commencement of filling, the Soils Engineer shall make optimum moisture and maximum density tests in accordance with ASTM D-698.

3. The Soils Engineer shall review the compaction equipment and approve its use before the Contractor begins compaction operations.
4. The Soils Engineer shall render full-time field inspection during earthwork operations and shall make appropriate tests and observations of preparation of subgrade and fills.
5. Records of all testing shall be maintained by the Soils Engineer and copies of same shall be sent directly to the Owner, Architect, and the Contractor.

C. Field Tests:

1. Make at least one field density test of subgrade for every 8,000 sq. ft. of paved area, but in no case not less than three (3) tests. In each compacted fill layer, make one field density test for every 8,000 sq. ft. of overlaying paved area, but in no case not less than three (3) tests.
2. Subgrade or fills which test below specified density requirement: provide additional compaction and re-testing at no additional expense to the Owner.

1.5 **DEFINITIONS:** The following definitions are hereby established for terms used to describe the work of this section:

- A. Earthwork shall be unclassified in nature, and shall include the stripping and stockpiling of surface soils, excavating of all types, placing embankment, compacting and grading.
- B. Compacted Structural Fill (Controlled Fill) is all material placed to raise the grade of the site, or backfill excavations, for establishment of elevations of structures, exterior slabs and various pavements upon which the Soils Engineer has made sufficient tests and observations to enable him to issue a written statement that, in his opinion, the fill is of a quality for the intended purpose and has been placed and compacted in accordance with the requirements of this Specification. (It is hereby noted that the words "compacted structural fill" and "controlled fill" are used interchangeably throughout the specifications and drawings for this project.)
- C. General Fill is material used to raise the grade of the site or backfill excavation for establishment of elevations of seeded or landscaped areas upon which the Soils Engineer has made sufficient tests and observations to enable him to issue a written statement that, in his opinion, the fill is of a quality for the intended purpose and has been placed and compacted in accordance with these specifications.
- D. Borrow or Imported Material is material that is obtained from sources off the site chosen by the Contractor, subject to all required tests and observations specified herein.
- E. All materials shall be of granular nature and with sufficient binder characteristics to form a firm, stable and unyielding subgrade.

1.6 **JOB CONDITIONS:**

- A. Dust Control: Use all means necessary to control dust on and near the work when such dust is caused by the Contractor's operations during the performance of the work or if resulting from the condition in which the Contractor leaves the site.
- B. Protection: Use all means necessary to protect all materials of this section before, during and after installation and to protect all objects designated to remain. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

1.7 **BASIS FOR BIDS:** Bids shall be based on the following:

- A. That the existing surface elevations are as shown on the plans +/- 0.5 foot.
- B. The Contractor shall verify all existing grades prior to beginning work and notify Architect / Engineer of any discrepancies. Do not proceed until approval is received from Owner's Representative. Once work has commenced, the Contractor will be responsible to perform all work to meet the finished grades shown. Unsuitable or excess material will be disposed of off-site in a legal manner.
- C. Excavation and fill shall be calculated to subgrade elevations as shown on the drawings. Undercut or additional excavation or additional fill, beyond that shown on the drawings, required to achieve the proposed subgrade elevations shall be considered additional work under this Contract, except as exempted

under moisture conditions. (See Section 3.3 and 3.4.)

- D. The earthwork for this project has been designed to have a balance of cut and fill or an excess of cut material which shall be incorporated into the work. No off-site borrow (other than topsoil) or off-site disposal will be required.

1.8 **SITE INFORMATION:**

- A. Contractor shall visit the site or otherwise familiarize himself with existing surface and subgrade conditions prior to his bid for this Project.
- B. Soil or subgrade conditions not consistent with the design values shown on the drawings or contained in these specifications shall be promptly brought to the attention of the Owner and the Architect, and any discrepancies resolved prior to proceeding with further earthwork.

2.0 **PRODUCTS**

- 2.1 **TOPSOIL:** Shall be a combination of on-site soils from stripping operations and off-site soils from borrow operations (See Section 02260 for specific requirements.)

2.2 **FILL:**

- A. General Fill shall be constructed using on-site materials having a Unified Soil Classification System classification of CL or better, and shall be clean "select" fill, free from organics (1% or less by weight), clay balls, trash and other debris and deleterious matter. General fill shall contain no rocks or lumps over 3" in greatest dimension.
- B. Compacted Structural Fill shall be constructed using on-site materials having a USCS classification of SC or better, and shall be (clean "select" fill, free from organics (1% or less by weight), clay balls, trash and other debris and deleterious matter) and shall be free of organic or other deleterious materials.
- C. Material for infield mixture shall be on-site red or red-brown sandy clay, clean of any rocks or organic materials. Submit sample to Owner's Representative for approval prior to use. Test for mechanical properties (Sand, Silt, Clay composition).
- D. No frozen earth shall be used in fill.

- 2.3 **SAND (FOR INFIELDS):** Sand shall be red brick sand as supplied by TARMAC (Willis Road Plant) or approved equal. Sample and source identification to be supplied to Owner's Representative before delivery to the site.

3.0 **EXECUTION**

3.1 **GENERAL:**

- A. Familiarization: Prior to all work of this section, the Contractor shall become thoroughly familiar with the site, site conditions, and all portions of the work falling within this section.
- B. Backfilling Prior to Approvals:
 - 1. The contractor shall not allow or cause any of the work performed or installed to be covered up or enclosed by work of this section prior to all required inspections, tests and approvals.
 - 2. Should any of the work be so enclosed or covered up before it has been approved, the Contractor shall uncover all such work at no additional cost to the Owner.
 - 3. After the work has been completely inspected, tested and approved, the Contractor shall make all repairs and replacements necessary to restore all work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.
- C. The Contractor shall further check elevations given and report any apparent deviations.

- D. All rubbish and other objectionable material, rock, weeds, and vegetation which may interfere with any construction or subsequent use of specific areas, and other features not required as a part of the completed project are to be removed and disposed of in an acceptable manner. Coordinate with the County of Chesterfield regarding disposal permits.
- E. Maintain any and all bench marks, monuments and any other reference points, replacing as directed any such items disturbed or destroyed as a result of the contract work.

3.2 **STRIPPING OF SURFACE SOILS:**

- A. All areas within the limits of the work as shown on the drawings shall be stripped of surface soil not conforming to requirements for structural fill or general fill. Strip before excavation or filling is started. Surface soils shall not be stripped when in a frozen or muddy condition.
- B. Stockpile all topsoil on site in location indicated on Drawings. Keep topsoil separate from all other excavated materials and placed on well drained area. Stockpiles shall be stabilized with procedures outlined in the Virginia Erosion and Sediment Control Handbook and which do not interfere with subsequent work.

3.3 **EXCAVATING:**

- A. Regular excavation includes the removal of natural soils to the subgrade elevations as indicated on the drawings. In areas of pavement, regular excavation shall be made to subgrade elevations for subbase course and shall be proof rolled to achieve a firm and unyielding subgrade. All soft or yielding material which will not compact, **due only to moisture conditions**, as determined by soils engineer, shall be corrected as follows:
 - 1. If material is too wet for the required compaction, the material shall be dried by a method approved by the Soils Engineer prior to commencing or continuing compaction operations. Likewise, if the material is too dry for the required compaction, the material shall be moistened by a method approved by the Soils Engineer prior to commencing compaction operations.
 - 2. The Contractor has as his option to undercut / remove non-compacting soils and replace with suitable material for compaction.
 - 3. Moisture correction or undercut/backfill shall be performed at no cost of the Owner.

Low areas resulting from removal of unsatisfactory material shall be approved by Soils Engineer and the entire subgrade shall be shaped to line, grade and cross section. General Fill shall be used under non-paved areas compacted to 85% and Structural Fill compacted to 95% shall be used under pavements and structures. All areas shall be compacted to the specified percentage of maximum dry density and within 3% of optimum moisture content as determined by ASTM D-698 (Standard Proctor).

- B. Footing excavation: Excavations for footings shall be made in such a way as to provide bearing surfaces which are firm and free of loose, soft, wet, or otherwise disturbed soils. Concrete for footings shall be placed the same day as bearing surface is prepared to prevent softening due to overnight rain or other moisture. All footing bearing surfaces shall be observed and probed by a geotechnical engineer. Any soft or loose zones encountered shall be over-excavated to the depth and lateral limits recommended by the engineer and compacted structural fill or approved granular soil or crushed rock materials placed.
- C. Depressions resulting from removal of obstructions: Where depressions result from or have resulted from the removal of surface or subsurface obstructions, open the depression to equipment working width and remove all debris and soft material as directed by the Soils Engineer. Depressions shall be filled with structural fill as directed by Soils Engineer.
- D. Subsoil shall be kept separate from other excavated materials and stored in stockpiles in accordance with procedures outlined in the Virginia Erosion and Sediment Control Handbook and which do not interfere with subsequent work.
- E. Over Excavation: Over excavated areas shall be backfilled with clean fill and compacted to the density of the surrounding material according to ASTM D-698. Over excavation is the responsibility of the Contractor and no extra will be paid for unauthorized over excavation. (Over excavation is not undercut.)
- F. Undercut: The adequacy of all soil bearing value shall be determined by the Soils Engineer. Should soil

of inadequate density and bearing capacity be encountered at the elevations shown on the drawings, and where fill is to be placed upon loose existing fill material exposed by excavation, carry the excavation to the depth required to attain soil of bearing quality as determined by the Soils Engineer.

Contractor shall keep a record at the project site showing the amount of undercut excavated and removed from the site. This record shall be made available to the Owner, Architect or Soils Engineer for inspection upon request. Upon completion of undercutting operations as determined by the Soils Engineer, the record shall be delivered to the Owner.

Material to be used to replace excavated unsuitable fill (undercut) material shall be determined by the Soils Engineer.

- G. Excavation of Ditches: Swales shall be constructed accurately to the cross sections and grades indicated on the drawings. All swales and ditches shall be kept free of detrimental quantities of debris or silt, and finished so that they will drain readily.

3.4 EMBANKMENTS AND FILLS:

- A. All clearing and grubbing and removal of unsuitable material shall be complete prior to starting fills. All fill material shall be as specified in paragraph 2 of this Section. Stones larger than 1 inch, maximum dimension, shall not be placed in the upper six inches of fill. No layer shall be placed on the frozen surface of the preceding layer.
- B. The fill subgrade shall be proofrolled in the presence of a geotechnical engineer. Proofrolling shall consist of a minimum of four passes of a fully loaded dump truck or other approved equipment across the soil subgrade under investigation. Proofrolling shall be performed during a time of good weather and not while the site is wet as a result of recent rain or snow. Areas which pump, rut, weave, or are otherwise determined to be unsuitable by the engineer shall be in accordance with 3.3 A.
- C. Placement of Fill: The fill material shall be placed as soon as possible after proofrolling and approval of the subgrade area. The placement shall proceed without unnecessary interruptions. The fill material shall be spread evenly by mechanical equipment or by manual means above the approved subgrade and spread in loose lifts not exceeding eight inches or as determined by the Soils Engineer in the field, and shall be built up in horizontal layers as nearly even as practicable to prevent the thickness of lift from exceeding that specified.
- D. Moisture Control: If material becomes too wet for the required compaction, the material shall be dried by a method approved by the Soils Engineer prior to commencing or continuing compaction operations. Likewise, if the fill material becomes too dry for the required compaction, the fill shall be moistened by a method approved by the Soils Engineer prior to commencing compaction operations.
- E. Drainage at Site: At all times, maintain and operate proper and adequate surface and subsurface drainage to the satisfaction of the Soils Engineer in order to keep the construction site dry and in such condition that placement and compaction of fill may proceed unhindered by saturation of the area.
- F. As fill is placed, the fill slope shall be protected against run-off, in accordance with the Virginia Erosion and Sediment Control Handbook.
- G. All fill shall be placed in approximately horizontal layers not exceeding 8 inches in loose depth. Each layer shall be compacted uniformly to at least 95 percent of the maximum dry density and within 3% of the optimum moisture content, as determined by ASTM D-698, for structural fill areas. For general fill compaction shall be 85%. The degree of compaction shall be checked by the Soils Engineer, and each successive lift shall not be placed or compacted until the previous lift is inspected, tested and approved by the Soils Engineer. Layers shall be moistened or dried as directed if necessary to obtain the specified compaction. Should springs or other conditions that would endanger stability of the fill be encountered, immediately notify the Soils Engineer and Architect of such conditions. The Soils Engineer will determine the procedure to be followed for correcting the situation. The fill is to be compacted to elevations and limits shown on the drawings and or specified herein. At completion, the compacted fill shall be subject to final inspection and approved by the Soils Engineer. Any areas which are not acceptable to the Soils Engineer shall be reworked until acceptable at no additional cost to the Owner.

- H. The Contractor shall be responsible for the stability of all fill placed under the Contract until final acceptance of the work, and shall replace at his own expense any portions which have become displaced due to carelessness or negligence on his part or to damage resulting from natural causes, such as storms, and not attributable, in the opinion of the Architect, to unavoidable movements of the ground under which embankment is made.
- I. Field Density Tests will be performed with the nuclear field density device on backfill, subgrade, and fill material. The tests shall be performed by the Owner's Independent Testing Laboratory at his expense. During the backfill operation on all pipe lines, field density tests shall be performed as lifts are placed and compacted. Tests shall be performed at intervals and locations determined by the Soils Engineer. In the event the density does not conform to the requirements as stated, the Contractor shall continue his compaction effort or shall rework the entire area in question until the required density is obtained. This work shall be performed without extra cost to the Owner. The Contractor shall furnish all labor, materials, and equipment necessary to obtain the required density. The costs of any additional tests necessary as a result of the density not conforming to the requirements as stated, shall be borne by the Contractor.

3.6 **INFIELD CLAY FILL:** Where ball field infield fill is required, place and compact fill material in order to insure the required mixture and surface finish as hereinafter specified:

- A. Placement of Fill:
 - 1. Fill shall be 100% clay.
 - 2. Refer to Section 3.4 - Embankments and Fills.
 - 3. Top dress with 1/3" sand. Spread to uniform thickness.
- B. Chain link drag infield, starting from center to outside edges to achieve uniform surface. Clay/turf edge to be of uniform geometry and have a clean, neat edge.

3.7 **FROST:**

No materials shall be placed when either the fill material, or the previous lift (or subgrade) on which it is placed is frozen. In the event that any fill which has already been placed, or the subgrade, shall become frozen, it shall be scarified and re-compacted, or removed, to the approval of the Soils Engineer before the next lift is placed. Any soft spots resulting from frost shall be removed or re-compacted to the satisfaction of the Soils Engineer before any fill material is placed.

3.8 **GRADING:**

- A. Rough grade the entire site to the subgrade elevations indicated on the drawings or as otherwise required for proper drainage and completion of the work. Grade to at least the following tolerances:

Paved Surfaces: +/- 0.1 ft., and free draining.
Landscaped Areas: +/-s 0.3 ft., and free draining.
- B. Perform interim grading in the vicinity of excavations as required to prevent storm water drainage into the excavated areas insofar as is possible.

3.9 **TREATMENT AFTER COMPLETION OF GRADING:**

After grading is completed and the Soils Engineer has finished his observation of the work, permit no further excavation or filling except with the approval of and under the observation of the Soils Engineer.

3.10 **SHORING AND BARRICADES:**

- A. The Contractor shall do all shoring and bracing necessary to support adjoining soil and protect workmen.
- B. Provide temporary barricades required to properly guard the work during construction and to insure the safety of workmen and the public.
- C. For stability and safety of excavations, all work shall be done in accordance with the Virginia Department of Labor and Industry, Rules and Regulations Governing Construction, Demolition, and all Excavation.

3.11 ROCK EXCAVATION:

- A. Rock is not expected to be encountered on this site. Should actual site conditions differ from those shown on the drawings, rock shall be defined as follows and rock excavations shall be considered an extra service to the contract.
- B. Rock excavation shall be defined as hard bed rock, boulders or similar material requiring the use of rock drills or explosives for removal. The criteria for classification of general excavation as rock shall be that material which cannot be removed by a track mounted D-8 dozer with a heavy ripper or 3/4 C.Y. track mounted shovel with appropriate scoop. The criteria for trench rock shall be that material which cannot be removed by a 3/4 C.Y. track mounted back hoe with a proper width bucket. The trench unit shall only apply to material below the general grading level.
- C. General rock pay width shall be based upon 18" outside of a neat wall face: or vertical projection from the extremities of the base, whichever is greatest. Trench rock quantity shall be based upon the widths stated in the specifications. Disposal of excess shall be included.
- D. Blasting will be permitted upon written authorization by the Owner and shall be done in accordance with all state and local regulations.

3.12 DAMAGE TO EXISTING UTILITIES:

The approximate location of known surface utility structures are shown on the contract drawings, both proposed and existing for the Contractor's information. These locations are not guaranteed as accurate or complete; it is therefore the Contractor's responsibility to exercise all reasonable precautions in the performance of the work to avoid damage to or interference with the existing utilities, even though not shown on the drawings. If such damage, interference, or interruption of service shall occur as a result of his work, then it shall be the Contractor's responsibility promptly to notify the Architect of the occurrence and to repair or correct it immediately, at his own expense, and to the satisfaction of the Architect and Owner of the utility.

- 3.13 OFF-SITE RESTORATION:** The Contractor shall restore all off-site surfaces removed, damaged, or disturbed by his operations to the condition otherwise specified herein. Pipe culverts and all incidental drainage structures shall be restored using like materials and details. The Contractor shall maintain drainage during construction. Refer to Section 02070: EROSION AND SEDIMENT CONTROL for additional requirements.

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:**

This section includes all work necessary for spreading required topsoil and fine grading.

1.2 SITE PROTECTION:

- A. Walkways and other paving adjacent to construction operations shall be kept clean and free of obstruction, mud and debris at all times. Wheels of vehicles used in the work shall be cleaned if necessary.
- B. Protect finish grade areas as hereinafter specified.

1.3 INSPECTION AND ACCEPTANCE:

- A. Inspection of work under this section to determine completion of the contract work will be made by the Owner's Representative at the conclusion of the work as hereinafter described and upon written notice requesting such inspection.
- B. After inspection, the Contractor will be notified in writing by the Owner's Representative of acceptance of all work under this section, or if there are any deficiencies, of the requirement for completion of the work.

2.0 PRODUCTS

- 2.1 **TOPSOIL:** Shall be on-site topsoil stockpiled from stripping operations and off-site sandy loam or loam soil borrow. It shall be cleaned if necessary to be free of clay, lumps, stones, roots or similar substances one (1) inch in diameter or larger, debris, or other objects which might be a hindrance to planting growth or become a hazard to a landscaped area.

3.0 EXECUTION**3.1 FINISH GRADING AND TOPSOILING:**

- A. Finish grading of area to be delayed until just prior to time of permanent stabilization.
- B. If subgrade has been compacted beyond limits which allow normal percolation, this Contractor shall scarify to a minimum depth of 2" for general turf areas to provide a transition layer with topsoil to be achieved with "sub-soiler" type of equipment or equal.
- C. Topsoil shall not be placed when either the topsoil or subgrade is frozen, excessively wet or in a condition otherwise detrimental to the proposed planting or to proper grading.
- D. When placing topsoil on slopes of 3:1 or greater, groove subgrade to 4" depth at 18" minimum on-center in a direction perpendicular to the slope to aid in holding topsoil in place.
- E. Furnish topsoil depths within the limits of work line or as shown on drawings on all areas not shown for paving or special surfacing. Place minimum of:

Athletic Fields:	6" minimum (3" compacted borrow over 3" on-site stockpiled topsoil)
General Turf:	4" minimum (on-site only)

Surplus materials remains the property of the Owner and will be stockpiled on-site, in a location shown on Drawings.

- F. Immediately following placement of topsoil the entire area shall be disked, raked free of stones and debris over 1/2 inch in any dimension. All such stone and debris shall be removed from the premises.
- G. The finished surface shall be true to grades shown on the drawings, with a maximum tolerance of 0.1 foot and ready for seeding and free of any depressions or high spots which would hold water or interfere with the intended use.

3.2 DAMAGE TO EXISTING UTILITIES:

The approximate location of known surface utility structures are shown on the plans for the Contractor's information. These locations are not guaranteed as accurate or complete; and it is therefore the Contractor's responsibility to exercise all reasonable precaution in the performance of the work to avoid damage to or interference with the existing utilities, even though not shown on the drawings. If such damage, interference, or interruption of service shall occur as a result of his work, then it shall be the Contractor's responsibility promptly to notify the Owner's Representative of the occurrence and to repair or correct it immediately at his own expense, and to the satisfaction of the Owner's Representative and the Utility.

END OF SECTION

1.0 GENERAL

- 1.1 **SCOPE:** Provide all labor, equipment, materials and maintenance to fully and properly complete the work indicated on the drawings and or specified herein.

All areas surrounding the site which have been disturbed by construction activities shall be seeded.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

Earthwork, Finish Grading, and Topsoiling.

1.3 APPLICABLE CODES AND STANDARDS:

Unless specified or indicated otherwise, the State of Virginia Seed and Sod Certification Standards and Virginia Department of Transportation (VDOT) "Road and Bridge Specifications, (1991 Edition)", form a part of this specification, to the extent of all provisions applicable to the work required for this project, and as specifically referenced herein.

1.4 REQUIRED SUBMITTALS:

- A. Seed mix delivery ticket.
- B. Soil amendment product cuts/tickets.

2.0 PRODUCTS

- 2.1 **GENERAL:** All material to conform to requirements stipulated below, unless otherwise approved in writing by Owner's Representative. Delivery tickets, indicating date, weight, analysis, and vendor's name, to be submitted to Owner's Representative.

- 2.2 **GRASS SEED** shall be fresh new crop seed complying with purity and germination requirements stipulated herein. Grass seed mix shall approximate the following:

Kind of Seed	% of Weight	% Purity	% Germination
Ky-31 Tall Fescue	100%	98%	85%

- 2.3 **COMMERCIAL FERTILIZER** shall have an analysis of 10-20-10 (NPK) with a full range of minor elements. One half of the nitrogen content shall be derived from an organic source, the remaining half shall be derived from an inorganic source. Liquid fertilizer is not acceptable.

- 2.4 **LIME** shall be pelletized, ground limestone. Liquid lime or pulverized lime is not acceptable.

- 2.5 **MULCH** shall be fresh clean wheat straw with non asphaltic tackifier.

3.0 EXECUTION

- 3.1 **GENERAL:** All areas within the project limits which are not shown for paving or special surfacing shall be seeded as specified above.

- 3.2 **SEEDING** shall be by mechanical means. No seeding shall be done during winds over 5 mph. Seed for each area shall be divided into two equal parts, each to be seeded in a separate operation with the second seeding to be over the first and at right angle to it. Seed may be applied by any method and equipment satisfactory to the Owner's Representative. Hydroseeding method shall be in accordance with all provisions of the Virginia Department of Transportation Road and Bridge Specifications for non-athletic field areas only. Approval by the Owner's Representative is required. Seeding shall take place between March 1 and May 1 or September 1 and November 1.

Approval of the Owner's Representative is required before seeding is to begin. Seeding during any other time period will be considered temporary in nature. If a type of distribution is used which deposits seed on surface, the seed shall be covered by approved method (hand raking, culti-packer, or Sherman Gill Spiker Model # 204-900 or equivalent.)

- 3.3 **TILL** all areas to be seeded to a minimum depth of 4". Following initial tilling, soil physical conditioners, lime, fertilizer, shall be thoroughly incorporated into the soil to a minimum depth of four (4) inches in a manner and with equipment satisfactory to Owner's Representative.

- A. Fertilizer application at a rate of 40 lb./1000 sq. ft..
- B. Lime application: Allow 100 lb./1000 sq. ft.. (Amend soil Ph to a level of 6.0-6.5 and notify Owner's Representative of any additional requirement.)

- 3.4 **FIRM AND SMOOTH** all areas with light spiker/roller.

- 3.5 **SEED:** Tall Fescue at a rate of 8 lb./1000 sq. ft.

- 3.6 **MULCH** all seeded areas immediately following seeding. Chopped straw to be evenly applied at an average rate of 2 tons per acre so as to provide a loose depth of not less than 1 inch or more than 2 inches. No clumps of straw acceptable.

4.0 **MAINTENANCE AND GUARANTEE**

- 4.1 **MAINTENANCE** of grass areas shall consist of watering, cutting, repair of all erosion to establish a uniform stand of the specified grass, and shall continue until acceptance. After the seeded grass has started, all of the areas which fail to show a uniform stand of grass for any reason, whatsoever, shall be seeded repeatedly until all areas are covered with a satisfactory growth of grass.

Maintenance shall also include all temporary protection fences, barriers and signs and all other work incidental to proper maintenance.

All new established turf areas shall not be mowed until the turf has become firmly rooted. Mow to 3" height. Do not allow clippings to mat or clump. Provide maintenance for a minimum of two (2) cuttings or until turf is determined acceptable.

5.0 **FINAL ACCEPTANCE**

- 5.1 An acceptable turf grass stand shall be defined as follows:

- A. Healthy, vigorous stand of only species specified. (5% non-species.)
- B. Uniform 95% coverage with no bare spots over one foot square.
- C. Color to be that of grass species and uniform throughout stand of turf.
- D. Density of individual grass plants to be uniform, with no clumping or sparse areas.
- E. Turf grass established on surface grades that are uniform, free of depressions and mounds.

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:**

Furnish all labor, materials, maintenance and equipment and perform all work required to complete the plantings indicated on the drawings and specified herein, which shall include, but be limited to, the following:

- A. Supply of material
- B. Excavation of plants
- C. Installation and backfill
- D. Mulching and other appurtenances
- E. Maintenance and guarantee

1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Finish Grading and Topsoiling.
- B. Seeding.

1.3 SUBMITTALS:

- A. Sample of bark mulch.
- B. Maintenance schedule outlining monthly procedures for Owner to follow during Guarantee period.
- C. Written schedule of sources for plant materials.
- D. Test results of topsoil.

1.4 STANDARDS:

- A. The standard for determining size, grade and quality of plants shall be U.S.A. Standard for Nursery Stock, latest edition, as published by and approved by the American Association of Nurserymen. This document is a part of these Specifications by reference.
- B. Substitutions will be permitted only upon authorization by the A/E. Substitutions shall be requested in writing ten days after the Contract has been awarded to the successful bidder. All proposed substitutions shall possess the same essential characteristics as the kind of plant actually specified in regard to appearance, specified height and width, ultimate height, shape, habit of growth, required soil conditions, climate conditions and other requirements. In no case shall average cost and value of substituted plants be less than the cost and value of plants actually specified. Plants of greater value may be accepted without additional cost to the Owner.

1.5 DELIVERY, STORAGE AND HANDLING:

- A. Damaged plants shall be removed from the job and replaced regardless of whether the plants were damaged before, during or after planting, as long as the Contract is in effect. Damage shall consist of broken limbs, skinned bark, mutilated roots, ingrown wiring or tags, and the like. In the case of B&B material, crushed or broken balls shall similarly be cause for rejection. Such material shall be replaced by the Contractor at no additional charge within 30 days after rejection, provided such replacements are made during the planting periods prescribed herein. Otherwise, such replacements shall be made during the first 30 days of the planting season following the original planting.
- B. Plants shall be protected promptly upon their arrival on the job in the following manner:
 - 1. B&B and bare-root material that can not be planted immediately shall be well watered and stored in a shaded position. The root balls shall be protected from evaporation by covering with earth, tarpaulins, or waterproof paper.
 - 2. Containerized material that can not be planted immediately shall be well watered and stored in shaded

positions.

Leaf canopies of all materials shall be misted with a fine spray of clean water (to runoff) to reduce stress one to three times per day, depending on climatic conditions. One spray shall occur during the heat of the day and no spraying may occur prior to 2 hours before sundown.

- C. Plants shall not be pruned prior to delivery except with special permission of the Owner's Representative.
- D. Use of an anti-desiccant is not permitted.

1.6 PLANTING SEASON:

- A. Planting periods shall be restricted to the spring between February 15 and May 15, and the fall between September 15 and December 15, unless special instructions to the contrary are issued by the Owner's Representative.
- B. The Contractor shall be required to follow any and all special precautions and horticultural practices to insure plant material's livability when planting operations must be accomplished during the summer months.

1.7 PROTECTION AND GUARANTEE:

- A. The life and satisfactory condition of all plants shall be guaranteed by the Contractor for one year.
- B. During the guarantee period, any plant which dies or is in a diseased, infested, unhealthy, or badly impaired condition shall be replaced by the Contractor as soon as is reasonably possible after its unsatisfactory condition is evident. At the conclusion of the guarantee period, any plant not in a healthy growing condition, or one that has lost its shape due to dead branches, disease, or infestation, or is otherwise deficient, as determined by the Owner's Representative, shall be removed and replaced. Such replacements shall be made in the same manner as specified for the original planting and at no extra cost to the Owner. Replacements shall be made as often as may be necessary to provide a plant which is vigorous and healthy at the end of one full growing season (12 months after acceptance).
- C. The protection of all planting shall be the responsibility of the Contractor until final acceptance of the work. However, any planting which has suffered damage between planting seasons, which is obviously the result of vandalism, wanton carelessness, failure to function adequately, or other manner of accident beyond the control of the Contractor, shall not be subject to replacement under the provisions of the preceding paragraph.

1.9 SAMPLES, TESTS AND INSPECTIONS:

- A. Plants: Within ten days after Award of Contract, the Owner's Representative shall be notified in writing of the sources of the required plant materials. The Owner's Representative reserves the right to disapprove a source of material. The Owner's Representative reserves the right to inspect and tag all plant materials required to complete the planting operation. If for any reason, the Owner's Representative believes that the required materials are not in accordance with plans and specifications, they shall be replaced with approved materials at no additional cost to the Owner. The Contractor shall be responsible for all certificates of inspection of plant materials that may be required by Federal, State or other authorities to accompany shipments of plants.
- B. Topsoil: All topsoil shall be on-site material. The Contractor will be responsible for having the topsoil tested by a commercial testing laboratory approved by the Owner's Representative. Soil samples shall be taken from several locations on the site to a depth approved by the Owner's Representative. Soil shall be tested for physical properties and pH (or lime requirement), organic matter available phosphoric acid or potash. Sampling and testing shall be in accordance with standard practices of soil testing. Reference Section 02260 - FINISH GRADING AND TOPSOIL for specific test procedures.

Copies of the test results shall be provided to the Owner and the Owner's Representative at no additional cost.

The Contractor shall be responsible for amending the topsoil deficiencies found by testing. Topsoil shall be

approved before use.

2.0 PRODUCTS**2.1 MATERIALS:**

- A. Plants: All plants shall be of the kind and size indicated on the plans or Plant List and shall be true to name. All plant material shall be sound, healthy, vigorous, freshly dug nursery stock with a normal habit of growth and shall have been subjected to the normal nursery practices of root and top pruning, spraying, transplanting, etc., and shall have been inspected and approved for sale, transporting and transplanting by any or all governmental agencies authorized to administer such control. All plants shall be subject to inspection and approval of the Owner's Representative, prior to and after digging.
- B. Manure: A commercially sterilized, processed grade.
- C. Fertilizer: For trees and shrubs, provide fertilizer analyzing 20-10-5 slow release tablets. Installation as per label recommendations for specific conditions encountered.
- D. Bark Mulch: A medium textured shredded hardwood mulch, minimum two (2) passes through shredder.
- E. Topsoil: That stockpiled on the site, or additional as required to complete the work shown.

3.0 EXECUTION**3.1 METHODS:**

- A. Finish Grade Elevations: Do not proceed with LANDSCAPE WORK until Owner's Representative or appointed representative verified correct grades.
- B. Plant locations shall be marked on the ground and approved by the Owner's Representative before beginning excavation.
- C. Prior to excavation of plant pits the Contractor shall ascertain the location of all utilities, tanks, etc., so that proper precautions can be taken not to disturb or damage any subsurface improvements. In the event any are uncovered, the Contractor shall notify the Owner's Representative and the Owner's Representative shall arrange to relocate or delete the plant material.
- D. All holes for individual plants shall be dug to a depth and diameter as detailed on the Drawings. In the event that subsurface drainage problems are discovered in the planting areas, A/E shall advise course of action.
- E. Any rock or other underground obstruction shall be removed from the areas of excavation according to plans and specifications. If overhead obstructions or rock are encountered in excavation planting areas, other locations may be selected for planting.
- F. In the event the plant pits retain an excess amount of water, an 8" diameter hole shall be drilled in the bottom of the plant pit to a depth of 6' and filled with gravel. The cost of such will be an addition to the Contract.
- G. All excess or waste material from planting operations shall be disposed of on the site as directed, or removed from the site and disposed of off-site in a legal manner.
- H. At no time shall soil backfill be compacted--watering and tamping to settle the backfill are permissible. All backfill shall be made with excavated native soil and stockpiled and borrow topsoil in accordance with immediate local conditions. Soil shall be placed around the roots of the ball of the plant on layers not exceeding 6 inches and thoroughly watered and tamped before more soil is added. The final grade about the plant shall be the same relative position to grade as it occupied previous to excavation. Soil shall be placed to such depth that after settlement it will be even with the surrounding grade. The water ring shall be maintained around each plant as shown in the Drawings until final acceptance of the planting.
- I. No soil shall be handled when it is in a frozen or muddy condition.
- J. Tree trunks shall not be wrapped.
- K. Support systems shall be required for all trees in accordance with details shown on the drawings. Attention is directed to placement and number of guys, stakes, protecting hose sections, etc.
- L. Support systems shall be done within 24 hours after planting.
- M. Root and top pruning shall be performed in accordance with instructions given on the job.
- N. All mulching shall be done within 24 hours after planting. Do not place mulch within a 5" radius of tree trunks and 3" from shrub stems. Mulch all beds with minimum 4" mulch depth.

- O. After planting, water shall be used in sufficient quantity to thoroughly saturate the ground at each point.
- P. Areas which may be eroded by rain during the duration of the Contract shall be repaired by the Contractor and he shall be responsible for clearing the eroded material off of adjacent areas as required.

4.0 MAINTENANCE**4.1 MAINTENANCE OF NEW PLANTING:**

Maintenance of new planting shall begin when planting operations start and shall continue until final acceptance by the Owner or by his authorized representative. The Contractor shall furnish to the Owner's Representative for this approval a written schedule for watering, fertilizing and maintenance of all plant materials prior to commencement of any work. If during the guarantee period the plants are in the opinion of the Contractor not being properly maintained in accordance with instructions, the Contractor shall notify the Owner's Representative in writing of such conditions.

- A. Trees, shrubs and groundcover shall be protected and maintained by the Contractor until final acceptance by the Owner. Maintenance shall include watering, weeding, cultivating, mulching, tightening and repairing stakes and guys, removal of dead vegetation, resettling plants to proper grades or upright position and restoration of the planting saucer, and any other necessary operations. Acceptance will not be made by Owner unless all plantings are weed-free.
- B. Trees, shrubs and groundcovers will be protected and maintained by the Owner during the period of the one (1) year guarantee.

4.2 REPLACEMENT OF NEW PLANTINGS: At the end of the one (1) year guarantee period, inspection of new plantings will be made by the Owner or his authorized representative upon written notice requesting such inspection submitted by the Contractor at least ten (10) days before the anticipated date. Any plant required under this Contract that is dead shall be removed from the site; these and any plants missing due to the Contractor's negligence, shall be replaced as soon as conditions permit during the normal planting season at no additional cost to the Owner. During the planting season, any plant in an unhealthy or badly impaired condition shall be replaced promptly. All requirements shall be in compliance with plans and specifications.

4.3 ADJUST AND CLEAN:

Clean-up, Protection and Repairs:

- A. During the landscape work, store materials and equipment where indicated. Keep pavements clean and work areas in an orderly condition.
- B. Protect landscape work and materials from damage due to landscape operations, operations by other Contractors and trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed.
- C. Final Review and Acceptance:
 - 1. When the landscape work is completed, including maintenance, the Owner's Representative will, upon written notice, make an inspection to determine acceptability.

The landscape work may be inspected for acceptance in parts agreeable to the Owner's Representative, provided the work offered for inspection is complete, including maintenance, and that the area comprises one complete unit, not too small for individual consideration.

- 2. If landscape work is not acceptable to the Owner's Representative, the Contractor shall replace the rejected work and continue specified maintenance until the work is reinspected by the Owner's Representative and

found to be acceptable.

END OF SECTION

1.0 GENERAL

- 1.1 **SCOPE:** Provide all labor, equipment, materials and maintenance to fully and properly complete the work indicated on the drawings and/or specified herein. Unless specified otherwise in this Section, the work includes, but is not limited to the following:

New storm sewers and inlets

1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Erosion and Sediment Control
- B. Earthwork
- C. Concrete
- D. Site Utilities

1.3 APPLICABLE CODES:

- A. Virginia Department of Transportation Road and Bridge Specifications, latest edition.
- B. Local codes, standards and regulations, latest edition.
- C. The latest rules and regulations governing construction, demolition and excavation adopted by the Safety Codes Commission of the Commonwealth of Virginia.
- D. Erosion and Sediment Control Handbook, Commonwealth of Virginia, latest edition.

1.4 REQUIRED SUBMITTALS:

- A. Pipe Products Cuts.
- B. Drainage Structures and Accessories.
- C. Inline Drains, Catch Basins, and Grates

1.5 PROTECTION:

- A. Maintain all bench marks, monuments and other reference points. If disturbed or destroyed, replace as directed.
- B. Locate all active utilities traversing the site and protect them from damage.
- C. Dust Control: Use all means necessary to control dust on and near the work and on and near off-site borrow areas if such dust is caused by the Contractor's operations during performance of the work or if resulting from the condition in which the Contractor leaves the site. Thoroughly moisten all surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of other work on the site.

2.0 PRODUCTS

- 2.1 **CONCRETE** and the equipment, workmanship, and materials shall conform to the applicable requirements of Section 03300, "Site Cast-In-Place Concrete" except as hereinafter specified. Concrete shall have a minimum compressive strength of 3000 pounds per square inch at 28 days. The maximum size of coarse aggregate shall be 1 1/2 inches and the gradation shall be Virginia Department of Highways Size 57. Concrete shall have a slump of not more than three inches. The concrete mixes shall have an air content by volume of concrete, based on measurements made immediately after discharge from the mixer, of five to seven percent. Air content shall be determined in accordance with ASTM C-173.
- 2.2 **PRE-CAST CONCRETE DRAINAGE STRUCTURES** shall be reinforced concrete meeting the requirements of VDOT Section 226 and may be substituted for any cast-in-place item per VDOT reference. Shop Drawings are required.
- 2.3 **INLINE DRAINS AND CATCH BASINS** shall be pre-formed polyvinylchloride, rated by manufacturer to 10,000 pounds installed bearing strength, additional if noted. Catch basins shall be custom manufactured to accommodate specified inlet(s), outlet(s), pipe types, invert elevations, overall height, and other requirements. Catch basins shall be equipped with square, hinged, cast iron grates with maximum 0.5 inch slotted openings and recessed locking

devices.

- 2.4 **HIGH DENSITY POLYETHYLENE (HDPE) PIPE** shall be smooth-walled inside. Pipe shall conform to the requirements of Section 232 of the VDOT Road and Bridge Specifications.
- 2.5 **POLYVINYLCHLORIDE (PVC) PIPE** shall conform to the requirements of Section 232 of the VDOT Road and Bridge Specifications.
- 2.6 **REINFORCING RODS AND WIRE MESH** to be placed as detailed in the sizes indicated. Wire mesh shall conform to ASTM A-185, steel rods to ASTM A-615 Grade 40.
- 3.0 **EXECUTION**
- 3.1 **TRENCH EXCAVATION AND BACKFILL:**

- A. General: All excavation of every description and of whatever substances encountered shall be performed to the lines and grades indicated or as specified. The cut shall be made to provide cover as shown over the top of the pipe and to the grades indicated. During excavation, material suitable for backfilling shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. All excavated materials not required or suitable for backfill shall be disposed of as directed on the site. Grading shall be done as necessary to prevent surface water from flowing into trenches or other excavations, and trenches shall be kept free from water by pumping or by other approved methods while construction therein is in progress. Excavation shall be by open cut.

Additional payment will be made for removal of all materials of every nature, description, which are encountered in work to obtain indicated lines, and grades, which in the Owners Representative's opinion will require use of air-operated hammers, wedging or blasting. Vertical payment lines for the work; pipe trenches 24 inches greater than nominal pipe diameter, formed concrete structures 24 inches beyond exterior of walls, masonry manholes twelve inches beyond exterior of walls. No additional payment will be made for unauthorized removal of materials below indicated sub-grade elevations. No additional payment will be made for removal of slabs on earth, existing walls, sidewalks, curbs, paving, regardless of methods used in removal.

- B. Trench Excavation: Trenches shall be of the necessary width for proper laying of the pipe but shall not exceed 33 inches in width for pipe smaller than 15 inches. Provide a minimum of eight inches between the outside of the pipe and the side of the trench or sheeting for pipe 15 inches and larger. The sides of pipe trenches shall be as nearly vertical as practical. Care shall be taken not to over-excavate. Any portion of the trench over-excavated which is not so indicated on the plans or directed by the Owner's Representative shall be refilled to proper grade with crushed stone properly compacted at no additional cost. For sewer and storm drainage lines, the trench shall be over excavated to a depth of four inches below the pipe barrel to permit placement of crushed stone bedding material.
- C. Shoring and Sheeting: Excavations shall be shored to prevent injury to persons, damage to structures and utility lines, injurious caving or erosion and to conform to the requirements of applicable law. Shoring, sheeting and bracing shall be removed as the excavations are backfilled. Care shall be exercised to prevent injurious caving during the removal of the shoring or sheeting. Where in the opinion of the Owner's Representative damage is likely to result by removing the sheeting, the sheeting shall be left in place.
- D. Pipe Bedding: Trenches shall be excavated to a minimum of 4 inches below the bottom of the barrel of pipe. The bottom of the trenches shall be accurately graded and shaped to provide uniform bearing and support for each section of the pipe at every point along its entire length, except for the portions of the pipe sections where it is necessary to excavate for bell holes and for the proper sealing of pipe joints. Storm sewers shall be bedded on four inches of crushed stone, crusher run 3/4 inches and smaller or Virginia Department of Transportation, Size 78. The bedding shall be shaped to provide support 1/4 of the pipe circumference. The bottom of the trench and bedding material shall be shaped to provide a uniform bearing for the full length of the pipe except for joints. Bell holes and depressions for joints shall be dug after the trench bottom has been graded so that the pipe rests on the prepared bottom for as nearly its full length as practicable. Bell holes and depressions shall be only of such length, depth and width as required for properly making the particular type of joint. Stones shall

be removed as necessary to avoid point bearing. Whenever wet or otherwise unstable, material shall be over excavated to a depth as directed by the Owner's Representative to allow for construction of a stable pipe bedding. The trench shall then be backfilled to the proper grade for installation of the pipe with crushed aggregate, Virginia Department of Transportation, Size 78.

- E. Laying Pipe: Commence at the lowest point in the system and lay the pipe with bell or groove-end upgrade. Test pipe for soundness and clear interior and joint surface before lowering the pipe into the trench. Lay pipe in straight lines and on uniform grades between points where changes in alignment or grades are shown. Bed the pipe barrel uniformly.
- F. Backfilling: Trenches shall not be backfilled until pipe has been inspected. Backfill by hand around and over pipe using earth free from stones or debris to a depth of one foot over the pipe and compact in layers not exceeding six inches in thickness. Compact the remainder of the trench thoroughly by tampers or by trench width self propelled compactors when safely above the pipe. Backfilling material shall be piled on and over the trench over the normal grade to provide for reasonable settlement and left neatly rounded on all sewer line construction. Backfilling shall follow installation of pipe as closely as possible, and no more than 200 feet of completed work shall be left uncovered at any time. All pipe must be covered at the end of the day. Backfill of trench through or within 15 feet of paved areas or areas to be paved shall be placed and compacted in six inch layers for the full depth of the trench to 95 percent of maximum density, AASHTO-T99. Compaction of soil in grassed areas shall be a minimum of 85 percent.
- G. Dewatering Trenches: Adequate pumps shall be provided and maintained if necessary to prevent the accumulation of water in trenches until the backfill is placed to a depth of 24 inches above the pipe. The Contractor shall not open more trench in advance of pipe laying than available pumping facilities are able to keep dewatered, to the satisfaction of the Owner's Representative.
- H. In addition to the above, trench excavation and backfill shall conform to the applicable requirements of Section 02200 Earthwork (Site).

3.2 **INSTALLATION OF STORM DRAINS AND CULVERTS** shall conform to the requirements of Virginia Department of Transportation Specifications, Section 302 except as modified herein.

3.3 **INSTALLATION OF INLINE DRAINS AND CATCH BASINS** shall be in accordance with the manufacturer's recommendations. Protect edges from cracking and chipping during installation of adjacent surfaces. Bedding and backfill stone or gravel shall conform to ASTM D2321.

- A. After excavation of clean cut trench, set inlets and catch basins securely in stone base as recommended by manufacturer to obtain true alignment and elevation. Seat pipes. Recheck depth, level, position. Maintain slope as required to meet adjacent drain line tie in(s). Backfill evenly with stone/gravel in 12" lifts, compacting each.
- B. Place bedding concrete in accordance with the drawings for heavy-duty installations. Thoroughly vibrate or tamp to ensure elimination of trapped air pockets.

3.3 **EROSION CONTROL STONE** shall be placed in accordance with Virginia Department of Transportation Specifications, Section 418.

3.4 **DEWATERING:** If any dewatering is required to construct the work as required, all costs for dewatering shall be borne by the Contractor.

3.5 **CLEANING:** Flush all sewers with water in sufficient volume to obtain free flow through lines. Remove all debris, silt and correct any defects.

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:**

Furnish all labor, materials, maintenance and equipment and perform all work required for bituminous concrete pavement indicated on the drawings and includes, but is not necessarily limited to:

- A. Final preparation of subgrade
- B. Mineral aggregate base course
- C. Bituminous materials
- D. Pavement markings

1.2 STANDARDS:

The following codes and standards, latest edition, form a part of this specification, to the extent of all provisions applicable to the work required for this project, and as specifically referenced herein.

All work shall comply with Virginia Department of Transportation Road and Bridge Specifications (1994 Edition) and with applicable codes and regulations.

1.3 SUBMITTALS:

- A. Bituminous Materials
- B. Pavement Markings Materials

1.4 QUALITY ASSURANCE:

Qualifications of Workers:

- A. Provide at least one person who shall be thoroughly trained and experienced in the skills required, who shall be completely familiar with the design and application of work described on this section, and who shall be present at all times during progress of the work of this section and shall direct all work performed under this section.
- B. For actual finishing of the pavement surfaces and operation of the required equipment, use only personnel who are thoroughly trained and experienced in the skills required.

1.5 PRODUCT HANDLING:

- A. Protection: Use all means necessary to protect bituminous concrete pavement materials before, during, and after installation and to protect the installed work and materials of other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

1.5 DUST CONTROL:

Use all means necessary to prevent spread of dust during performance of the work of this section. Thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other work on the site.

2.0 PRODUCTS**2.1 GENERAL:**

All materials of this section shall be in accordance with Virginia Department of Transportation Road and Bridge Specifications, 1994 edition.

2.2 AGGREGATE MATERIALS:

Sub-Base: (see drawings for required compacted thickness) Type 1, Size No. 21B.

2.3 BITUMINOUS MATERIALS:

Wearing Course: See Drawings for required compacted thickness) SM2A.

2.4 PAVEMENT MARKINGS:

- A. All paint for striping of traffic lines, parking spaces, etc. shall be No. 44 white in accordance with Section 239.16 Specifications of VDOT.
- B. Line width shall be 4" unless noted otherwise; comply in accordance with Sections 259 and 704 of VDOT Specifications.

2.5 OTHER MATERIALS:

All other materials, not specifically described but required for proper and complete installation of bituminous concrete paving, shall be as selected by the Contractor subject to the approval of the Owner's Representative.

3.0 EXECUTION

3.1 SURFACE CONDITIONS:

A. Inspection

- 1. Prior to all work of this section, carefully inspect the installed work of other trades and verify all such work is complete to the point where this installation may properly commence.
- 2. Verify that bituminous concrete pavement may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

B. Discrepancies

- 1. In the event of discrepancy, immediately notify the Owner's Representative.
- 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 FINAL PREPARATION OF SUBGRADES:

Verify that the preparation of subgrade as specified in Section Earthwork, of these specifications has been performed. In all areas that do not comply as required by that section, rework as required following the specification of that section before proceeding. Finish to the required grades with due allowance for the thickness of surfacing to be placed thereon.

3.3 EQUIPMENT:

- A. Compacting Equipment: All equipment shall be of the size and operating capabilities for the asphalt course types and thicknesses specified, with regard to the location of placement.
- B. Paving Equipment: All equipment for paving shall be spreading, self-propelled asphalt paving machines capable of maintaining line, grade, and the minimum surface thickness specified, except that spreader boxes may be used in areas not accessible to spreaders.

3.4 PLACEMENT OF AGGREGATE BASE COURSE:

- A. After subgrade has been completed as described in Article 3.2 above, place the specified base material over all areas to be paved.
- B. Wet and compact the base material, as required, using only the amount of water needed to secure moisture content and a compaction of 95%.
- C. Place the base material in layers not exceeding the maximum thickness for the type of compaction equipment used.
- D. Bring the compacted base finish to a uniformly smooth and hard surface conforming to the lines, grades, elevations, and cross sections shown on the drawings.

3.5 INSTALLATION OF BITUMINOUS CONCRETE PAVEMENT:

All bituminous surfaces shall be installed in accordance with the VDOT Road and Bridge Specifications, 1994 edition.

3.6 PROTECTION:

Protect from traffic during all operations and after final rolling, no vehicular traffic of any kind shall be permitted on the pavement until it has cooled and hardened and in no case in less than 24 hours.

3.7 PAVEMENT MARKINGS AND COATING:

- A. Preparation: Thoroughly clean the areas where pavement markings and coatings will be placed and locate all markings where indicated on the drawings.
- B. Application: Apply the material in strict accordance with the manufacturer's published recommendations, using all means necessary to protect the painted surfaces until dry.

END OF SECTION

1.0 GENERAL

- 1.1 **SCOPE:** Provide all labor, materials, equipment and maintenance to fully and properly complete the work indicated on the drawings and/or specified herein. Ball field fencing is part of separate contract, Unless specified otherwise in this Section, the work for this contract includes security fencing as indicated on drawings, but is not limited to the following:

- A. Pipe and Hardware.
- B. Fencing Fabric.
- C. Gates.

- 1.2 **EXAMINATION:** Verify existing finish grades and dimensions prior to beginning the work. Notify the Owner's Representative in writing of any discrepancies. Do not proceed with the work until discrepancies have been resolved.

- 1.3 **SUBMITTALS:** Submit shop drawings as required.

2.0 PRODUCTS

- 2.1 **GENERAL:** All posts, rails, fabric and hardware shall be galvanized metal. Reference to gauge or other "size" shall refer to steel, measured prior to galvanization.
- 2.2 **POSTS** shall be one piece, non-welded sections, SS-40 galvanized steel pipe. Pipe shall be galvanized, inside and outside, by hot dip process, not less than 1.8 oz. per S. F. total surface. Zinc shall conform to ASTM B-64.

	<u>Size</u>	<u>Weight</u> (Tol +/- 5%)
Gate Posts (12' Max. leaf size)	4" O.D.	6.56 lb./ft.
Gate Posts (6' Max. leaf size)	3" O.D.	4.64 lb./ft.
Corner and Terminal Posts	3" O.D.	4.64 lb./ft.
Line Posts	2" O.D.	2.28 lb./ft.

- 2.3 **RAILS:** shall be one piece, non welded sections, SS 20 galvanized steel pipe. Size shall be 1 5/8" O.D., weighing 1.35 lb/ft. Galvanization shall meet same requirements as line and corner posts.

- 2.4 **CHAIN LINK FABRIC** shall conform to ASTM F668.

- A. Fabric for fencing shall be 9 gauge, 2" (+/- 1/8") diamond mesh pattern, medium carbon steel, galvanized, with bonded vinyl coating, minimum wire break load of 1290 lb. All wire shall be galvanized with minimum coating of 0.35 oz. per S.F. of uncoated wire surface. Mesh size permissible variation of 0.125 in. Fabric shall be twist top and knuckled bottom selvages, all cut ends shall be factory coated.

- 2.5 **HARDWARE:** Including post tops, hinges, latches, braces, truss rods and turnbuckles, pull bars and similar devices shall all be hot-dipped galvanized steel meeting same requirements as line and corner posts. Painted fittings are not acceptable.

- 2.6 **BONDED VINYL COATINGS** shall be applied over all galvanized steel fence fabric. The finish shall be dense and impervious, free of voids and pores, and shall have a smooth and lustrous surface. All bonded vinyl coating

shall conform to ASTM F668 Class 2a or 2b. Coating thickness shall be 15-25 mil. for Class 2a (extruded) or 6-10 mil. for Class 2b (thermo-fused). Coating color shall be black.

3.0 EXECUTION

3.1 POST SPACING: Posts shall be spaced not more than 10 feet on centers in the line of fence. They shall be plumb with tops properly aligned.

3.2 LINE AND TERMINAL POST FOOTINGS: Post footings shall be installed in accordance with details.

3.3 FABRIC: Rolls of chain-link fabric shall be joined by weaving a single strand into the end of the rolls to form a continuous mesh pattern. The fabric shall be cut and attached independently at all terminal posts. The fabric shall be placed on the playing field side of the fence. Attach to posts at 12" O.C. maximum.

3.4 TOP, MIDDLE AND BOTTOM RAILS: Fabric shall be attached at no less than 15" O.C.

3.5 AT ALL TERMINAL POSTS and where fence changes direction, brace rails, as shown on the drawings, shall be at the same elevation on either side of the post.

A. Set bottom edge of fabric parallel with grade; at a maximum of 1" above grade over paved surfaces, 2" maximum over unpaved surfaces.

B. Locate brace rails adjacent to line post to insure true alignment of brace rail in relation to finished grades.

3.7 GATES shall be installed plumb and level and all hardware shall be adjusted to provide for smooth operation with a minimum swing as shown on drawings to stops. Gate frames shall be constructed of round tubing of the sizes indicated on the drawings. Gates shall be jointed at the corners by arc welding to form a rigid, one piece unit and filled with chain link fabric to match the fence. The fabric shall be fastened to the frame on all (4) sides by means of adjustable hook bolts and tension rods. All gates shall be equipped with hinges and a lockable assembly capable of securing by pad lock the gate in a closed position.

3.8 TOUCH-UP all minor "nicks" and abrasions to surface. Minimum of two (2) coats or until bare metal surface has been thoroughly coated to exclude moisture and achieve complete opaque covering of exposed metal surfaces.

4.0 GUARANTEE AND WARRANTY

4.1 WARRANTY: The Contractor shall guarantee all labor, materials, and workmanship for a period of one year after final acceptance.

END OF SECTION

1.0 GENERAL**1.1 SCOPE:**

Provide all labor, equipment, materials and maintenance to fully and properly complete the work indicated on the drawings and specified herein. Unless specified otherwise in this Section, the work includes, concrete and related items including but not necessarily limited to the following:

- A. Curb/gutter, walkways and cast-in-place drainage appurtenances.
- B. Footings and foundations.
- C. All other labor, materials, equipment which may be reasonably inferred to be required to make the work in this Section complete.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

Concrete work in connection with utilities is specified under other sections of the specifications. However, concrete shall conform to the design requirements specified herein unless indicated or specified otherwise in other Sections.

1.3 APPLICABLE CODES AND STANDARDS:

- A. In addition to complying with all pertinent codes and regulations, comply with all pertinent recommendations contained in the following American Concrete Institute publications:
 - 1. "Building Code Requirements for Reinforced Concrete", ACI 318-83.
 - 2. "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete", ACI 304-83.
 - 3. "Recommended Practice for Cold Weather Concreting" ACI 306R-78.
 - 4. "Hot Weather Concreting", ACI 305R-82.
 - 5. "Specifications for Structural Concrete for Buildings", ACI 301R-81.
- B. Where provisions of pertinent codes and standards conflict with this Specification the more stringent provisions shall govern.

1.4 SUBMISSIONS AND APPROVALS:

- A. Pour samples of slabs for approval of finish by Owner's Representative.
- B. Mix Design.

1.5 QUALITY ASSURANCE PROVISIONS:

Testing and Inspection of Concrete:

- A. The Contractor shall pay all costs for mix design and preliminary testing prior to concrete placement.
- B. Required testing of concrete and inspection of reinforcing steel shall be performed by an independent testing laboratory approved by the Owner's Representative. Costs of all tests and inspections shall be borne by the Owner, except mix design and preliminary testing prior to concrete placement.
- C. Individuals performing field tests of fresh concrete shall be certified as a Concrete Field Testing Technical, Grade I by the American Concrete Testing Institute or other recognized certification conforming to the ACTI's certification which requires successful completion of a written and performance examination on the applicable ASTM test methods of this section.
- D. Strength tests of concrete shall be performed for each 50 cubic yards of concrete but not less than one such test for any one day's operation. For each strength test, four specimens shall be required; one specimen shall be tested at an age of 7 days, two at an age of 28 days, and one spare held until final acceptance of the project.

Sampling and testing shall comply with C-172, sampling; ASTM C-31 Making and Curing. Contractor to keep accurate record of area covered by each sample.

- E. Unless otherwise specifically directed, no concrete shall be placed on or around the reinforcing steel until the Owner's Representative has inspected the steel in position in the forms and approved its installation, even though it has been inspected and approved by the inspection agency.
- F. Concrete shall have a maximum slump of 4", ASTM C-143.

2.0 PRODUCTS

2.1 PORTLAND CEMENT:

Portland cement shall conform to ASTM Specification C-150, Type 1.

High early strength Portland cement shall conform to ASTM Specification C-150, Type III. It shall only be used with Owner's Representative's written approval.

2.2 AGGREGATES:

Fine aggregate shall conform to ASTM Specification C-33.

Coarse aggregate for stone concrete shall conform to ASTM Specification C-33, Size No. 57.

- 2.3 **WATER** shall be clean and free from injurious amounts of oils, acid, alkalis, organic materials, and other deleterious substances.

- 2.4 **REINFORCING STEEL** shall be free from scale, rust, dirt and coatings and shall conform to the following requirement:

- A. Mesh shall be welded wire fabric with cold drawn wire meeting ASTM 185.
- B. Deformed Reinforcing Bars: ASTM A-615, Grade 60.

2.5 ADMIXTURES:

- A. Air entraining shall be added in strict compliance with manufacturer's recommendations. The air content shall be 4 to 6 percent. All agents shall conform to ASTM 231 or ASTM 173.
- B. Curing compound shall be a one coat transparent liquid, containing no wax; non-acid penetrating agent with outstanding chemical resistance that does not darken; quick in drying and complying with ASTM C-309.

- 2.6 **STEEL** for anchor inserts, angles, weld plates, and similar accessories shall conform to ASTM Specification A-36 unless otherwise specified.

2.7 FORMWORK:

- A. All forms for concrete work shall be so constructed as to produce finished concrete of the exact sizes, lines, and locations shown on the drawings. Forms shall be substantially built, of sufficient strength and rigidity to support the dead weight of wet concrete without spreading or buckling and shall be accurately put together with tight joints to prevent leakage of concrete mixture. Forms shall be properly braced or tied together to maintain position and shape.
- B. Forms for footings may be omitted when soil and workmanship permit accurate excavation to size and the omission shall be approved by the Owner's Representative after inspection.
- C. Wood forms for unexposed concrete surfaces shall be No. 2 common or better lumber; for exposed concrete surfaces shall be EXT-EEPA plyform, American Plywood Association.
- D. Form oil, sealer and ties shall be approved.

2.8 INSERTS AND FASTENING DEVICES FOR OTHER WORK:

Provide inserts, hangers, metal ties, anchors, bolts, dowels, thimbles, slots, nailing strips, blocking, grounds and other fastening devices required for attachment of other work. Properly locate in cooperation with other trades and secure in position before concrete is poured.

Coordinate the installation of various drainage pipes/sleeves, irrigation sleeves/pipes and electrical sleeves furnished and installed by those trades as required.

3.0 EXECUTION**3.1 SURFACE CONDITIONS:****A. Inspection:**

1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
2. Verify that all items to be embedded in concrete are in place and that concrete may be placed to the lines and elevations indicated on the drawings, with all required clearances for reinforcement.

B. Discrepancies: In the event of discrepancy, immediately notify the Owner's Representative; do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 PROPORTIONING CONCRETE:

- A. All concrete for slabs and miscellaneous footings shall be a minimum 3000 psi. at 28 days.
- B. The strength-quality of all concrete shall be established by tests which shall be made in advance of the beginning of operations, using the consistencies suitable for the work and in accordance with the "Standard Method of Making Compression Tests of Concrete (ASTM Serial Designation: C-39)". Preliminary tests shall be conducted by an approved independent laboratory and paid for by the Contractor.
- C. Under no circumstances shall the cement content for 3000 psi. concrete be less than 6.0 bags per cu. yd.; 4,000 psi. not less than 6.75 bags per c.y. All work shall comply with Virginia Department of Transportation, Road and Bridge Specifications and with applicable codes and regulations.
- D. All concrete shall be air entrained. The air entraining agent shall be added in strict compliance with manufacturer's recommendations. The air content for stone concrete shall be determined in compliance with ASTM C-231 or C-138.

3.3 MIXING OF CONCRETE:

- A. The mixing equipment shall be capable of combining the aggregates, cement and water within the specified time into a thoroughly mixed and uniform mass and of discharging the mixture without segregation.
- B. The mixing of concrete shall be done in a batch mixer of approved type which will insure a uniform distribution of the material throughout the mass. The equipment at the mixing plant shall be constructed so that all materials (including the water) entering the drum can be accurately proportioned and be under control. The entire batch shall be discharged before recharging. The mixing of each batch shall continue for at least two minutes during which time the drum shall rotate at a peripheral speed of about 200 feet per minute. The mixing period shall be measured from the time when all of the solid materials are in the mixer drum requiring that all the mixing water shall be introduced before one-fourth of the mixing time has elapsed.
- C. If transit truck mixers are employed, they shall be the revolving drum type, watertight and so constructed that the concrete can be mixed to insure a uniform distribution of materials. All solid materials for the concrete shall be accurately measured and charged into the drum at the proportioning plant. The truck mixer tank shall be equipped with a device by which the quantity of water added can be readily measured. Only the predetermined amount of water shall be added to the dry mixture at the site. Truck mixing shall be continued for not less than 50 revolutions after all the ingredients, including the water, are in the drum. Transit mixed concrete shall conform to ASTM Specification C-94. Manufacturer's rated capacity of mixers shall not be

exceeded.

- D. The re-tempering of concrete or mortar which has partially hardened, that is re-mixing with or without additional cement, aggregate or water, will not be permitted.

3.4 PLACING OF CONCRETE:

- A. Concrete shall be handled from the mixer, and in the case of truck mixed concrete from the transporting vehicles, to the place of final deposit as rapidly as practicable by methods which shall prevent separation or loss of ingredients. Under no circumstances shall concrete that has partially hardened be deposited in the work.
- B. Care shall be taken to work concrete into the corners and angles of the forms and around the reinforcement without permitting the materials to segregate or free water to collect on the surface and without disturbing the location of the reinforcement.
- C. Soil bottoms for slabs and footings shall be approved before placing concrete.
- D. Before placing concrete, remove water and foreign matter from forms and excavations. Unless otherwise noted, wood forms shall be thoroughly wetted just prior to placing concrete.
- E. If concrete is placed by pumping there shall be no aluminum used in pumping system.
- F. At any point in conveying, the free vertical drop shall not exceed 3 feet.
- G. Rate of Placement:

1. All concrete shall be deposited as soon as practicable after the forms and reinforcement have been inspected and approved by the Owner's Representative. Place concrete at such a rate that concrete is at all times plastic and flows readily between bare bars. When placing is once started, carry it on as a continuous operation until placement of the panel or section is complete.
2. Concrete shall be deposited in a manner to preclude the formation of cold joints between successive batches. Do not pour a greater area at one time than can be properly finished without checking; this is particularly important during hot or dry weather. Do not, in any case, pour a slab length greater than 20 feet without construction joints.

H. Compaction

1. Thoroughly consolidate all concrete by suitable means during placement, working it around all embedded fixtures and into corners of forms.
 2. During placement, thoroughly compact the concrete by hand tamping and by mechanical vibration.
- I. Water which accumulates on the surface of the concrete during placement shall be removed by absorption with porous materials in a manner that prevents removal of cement.

3.5 REINFORCEMENT:

- A. Securely support and fasten reinforcing steel in place to prevent movement during placement of concrete. Support slab reinforcing bars on high chairs and bar spacers of approved design.
- B. Welded wire fabric shall have a minimum side and end cap of 6" and be set 1 1/2" from top of slab.
- C. Minimum protection for reinforcing steel shall be as per ACI 318-77 code, or as noted on the drawings.

3.6 COLD WEATHER OPERATION:

Except on specified written authorization from the Owner's Representative, concrete shall not be placed when the atmospheric temperature is below 40 degrees F. When the concrete is likely to be subjected to freezing temperature within 24 hours or when so directed, concrete materials shall be heated so that the temperature of the concrete when deposited shall be between 65 degrees F and 80 degrees F. Methods of heating materials shall be subject to approval by the Owner's Representative. Water for mixing shall not be heated above 165 degrees F. Lumps of frozen material and ice shall be removed from the aggregates before placing them in the mixer.

3.7 PLACING CONCRETE IN HOT WEATHER:

- A. Do not use concrete with a placing temperature that will cause difficulty from loss of slump, flash set, or cold joints.
- B. Maintain a concrete temperature during placement of less than 90 degrees F.
- C. Use all means necessary to avoid drying the concrete prior to finishing operations.
- D. Use the specified water reducing, retarding admixture Type D, when delay in initial set is required.

3.8 FORMWORK:

Construct formwork to provide concrete conforming accurately to indicated lines and dimensions, and with surfaces free of offsets, waviness and bulges, in conformance with ACI 347-78. Thoroughly clean and coat surfaces before each use.

3.9 CONCRETE FINISHES:

- A. Slabs shall be pitched as indicated on the drawings or as directed by the Owner's Representative. No dry cement nor mixture of dry cement and sand shall be sprinkled directly on the surface of the concrete to absorb the moisture or to stiffen the mix.
- B. The surface of the concrete shall be compacted and screened as required to produce slabs of the required thickness, with reasonable true and uniform surfaces, to the required lines and grades. Slabs shall be finished by floating, troweling, and light brooming to produce a plain, gritty surface free from depressions or projections, and sloped as required. Tolerance is 1/8" in 10', but in all cases free draining.
- C. Tool all joints as shown on plan. Saw cut joints are not acceptable.

4.0 CURING AND PROTECTION

- A. Protect all concrete work and cement finishes against injury from the elements and defacement of any nature during construction operations. All concrete made with normal Portland cement shall be maintained in moist condition for at least the first seven days after placing, a high early strength concrete for at least the first three days, except as hereinafter modified.
- B. Contractor's Option: In lieu of (A) above, apply curing compound in strict accordance with manufacturer's directions by brushing applicator or machine sprayer immediately after finishing (as soon as concrete can be walked on without cracking).

END OF SECTION

1.0 GENERAL

- A. Unit Masonry Standard: Comply with ACI 530.1/ASCE 6 "Specifications for Masonry Structures", except as otherwise indicated.

Revise ACI 530.1/ASCE 6 to exclude Sections 1.4 and 1.7; Parts 2.1.2, 3.1.2, and 4.1.2; Articles 1.5.1.2, 1.5.1.3, 2.1.1.1, 2.1.1.2, 2.3.3.9 and to modify Article 2.1.1.4 by deleting requirement for installing vent pipes and conduits built in masonry.

- B. System Performance Requirements: Provide unit masonry that develops the installed compressive strengths (fm) indicated.

1.1 RELATED WORK SPECIFIED ELSEWHERE:

Site cast-in-place concrete

- 1.2 **SCOPE:** Provide all labor, materials, equipment and maintenance to fully and properly complete the work indicated on the drawings and specifications. Unless specified otherwise in this Section, the work includes, but is not limited to the following:

- A. Brick;
- B. Concrete masonry units (CMU);
- C. Mortar;
- D. Accessories;

1.3 SUBMITTALS:

- A. Shop drawings and product data shall be submitted for review in accordance with Section 01340, "Shop Drawing, Product Data and Samples". Section 01340 should include the following, if not insert here.
- 1. Shop drawings for reinforcing detailing fabrication, bending, and placement of unit masonry reinforcing bars.
 - 2. Material certificates for each different masonry product required.
 - 3. Material test reports from a qualified independent testing laboratory for mortar, grout mixes, and masonry units.
- B. Samples: The following samples shall be submitted for review in accordance with Section "Shop Drawings".
- 1. Face brick
 - 2. Joint reinforcing

1.4 DELIVERY, STORAGE AND HANDLING:

Stack masonry materials on platforms and cover to protect from the weather but also allow ventilation. Store mortar materials on elevated pallets protected from the weather. Materials that become damaged or contaminated will be rejected for use.

1.5 PRE-CONSTRUCTION TESTING:

- A. Field-Constructed Mock-ups: Before masonry work starts, sample panels two feet by four feet minimum by the total wall thickness shall be constructed at the site where directed. Panels shall indicate the masonry construction to be included in the project. Panels shall have inner and outer wythes, and reinforcing as

specified. Additional panels shall be constructed to show special conditions such as soldier courses, rowlock courses, copings, as required for the project. The mock-up panel faces shall show bond pattern, joint widths, joint tooling, color range of brick and mortar colors.

- B. Owner will employ and pay a qualified independent testing laboratory to perform the following preconstruction testing as well as other inspecting and testing services required for source and field quality control:
 - 1. Clay Unit Masonry Tests: For each different clay masonry unit indicated, units will be tested per ASTM C 67.
 - 2. Concrete Masonry Unit Tests: For each different concrete masonry unit indicated, units will be tested for strength, absorption, and moisture content per ASTM C 140.
 - 3. Prism Tests: For each type of wall construction indicated, masonry prisms will be tested per ASTM E 447, Method B.
 - 4. Mortar properties will be tested per property specification of ASTM C 270.
 - 5. Mortar composition and properties will be evaluated per ASTM C 780.
 - 6. Grout compressive strength will be tested per ASTM C 1019.
- C. Masonry work shall not begin until the panels have been approved. Additional panels shall be constructed as directed until an acceptable panel is approved.
- D. Sample panels may be a portion of the wall.

2.0 PRODUCTS

2.1 BRICK:

- A. General: All new face brick shall conform to the requirements of ASTM C216-87, Type FBS. Brick exposed to the earth or exposed to the weather shall be grade SW. Cored brick may be used in general brick paving; however, cores shall not be exposed to view or exposed to weather. Tops, bottoms, faces, and ends that will be exposed in completed work shall be solid units uniformly straight, true, and free from chips and spalls. Protect brick from damage during transportation and after delivery to the job site.
- B. Face Brick: Brick shall be 30-000 Rose Full Range, Modular 3 5/8" x 2 1/4" x 7 5/8", Calvert Colonials series as manufactured by Cushwa Brick Inc., P. O. Box 160, Williamsport, MD, 21795 (301) 223-7700; to match existing buildings.

2.2 CONCRETE MASONRY UNITS:

- A. Concrete masonry units shall be free of deleterious matter and substances that will corrode metal. CMU shall conform to the ASTM Standards referenced below. Shrinkage shall not exceed 0.05 per cent when tested in accordance with Rapid Method and average percentage of moisture in units at time of delivery shall not exceed 20 per cent of total absorption of units when tested in accordance with ASTM Standard C140.

Hollow Non-Load Bearing Units: ASTM C90, Grade N and as follows:

- 1. Net Area Compressive Strength: As required to produce concrete unit masonry construction of compressive strength indicated.
 - 2. Weight Classification: Light weight
- B. Concrete masonry units using light weight aggregate with concrete weighing less than 95 pounds per cubic foot shall have aggregate conforming to ASTM C-331.
- C. Units shall be actual 7 5/8 inches high, 15 5/8 inches long and widths as indicated on the drawings. One block plus one 3/8 inch joint shall be actual eight inches vertically.

2.3 MORTAR:

- A. Mortar materials for new brick shall be Type "S" and comply with ASTM C270, including all requirements for cementitious materials, aggregate, water, admixtures and storage of these materials.
- B. New face brick shall be laid with factory mixed mortar, colored if necessary to reasonably match existing structures.

2.4 ACCESSORIES:

- A. Reinforcing Steel:

Steel Reinforcing Bars: Billet steel complying with ASTM A-615.

- B. Continuous Horizontal Joint Reinforcing shall be ladder type as made by AA Wire Products Co., Hohmann and Barnard, Inc., or Dur-O-Wal National, Inc. and shall be hot-dip galvanized after fabrication in accordance with ASTM A153, Class B. Continuous longitudinal rods shall be 3/16 inch deformed high tensile wires with welded cross rods of No. 9 gauge high tensile steel wire forming a ladder design. Reinforcement for composite and cavity walls shall have three continuous parallel longitudinal rods. Cross rods in cavity shall be bent to form a drip within the cavity. Single wythe walls shall have reinforcement with two continuous parallel longitudinal rods. Reinforcement width shall be approximately two inches less than the total width of the wall and shall be centered within the wall. Lap all splice joints six inches minimum. Provide prefabricated "T" and "L" shaped reinforcing of the same materials at corners and wall intersections by the manufacturer of the joint reinforcing.
- C. To tie masonry veneer to masonry back-up systems, use flexible type ties; AA Wire Products Company "Flex-O-Lok" or National Wire Products Corporation "Pos-i-tie".

2.5 CLEANING SOLUTIONS:

Job-mixed Detergent Solution: Solution of trisodium phosphate (1/2 cup dry measure) and laundry detergent (1/2 cup dry measure) dissolved in one gallon of clean cool water.

2.6 SOURCE QUALITY CONTROL:

Concrete Masonry Tests: For each type, class, and grade of concrete masonry unit indicated, units will be tested by qualified independent testing laboratory for strength, absorption, and moisture control per ASTM C-140.

3.0 EXECUTION**3.1 INSTALLATION:**

- A. Temperature: When ambient air temperatures at the site are below, or expected to fall below 40 degrees Fahrenheit, make provisions for heating and drying materials and protecting completed work as per Brick Institute of America Technical Notes, Volume I, No. 1a. No masonry work is to be performed below 25 degrees F., without prior written notification to the Owner's Representative, stating protection methods to be used and receiving approval of the Owner's Representative.
- B. Workmanship:
 - 1. Installation of masonry shall be in accordance with the Brick Institute of America's Technical Notes.
 - 2. Lay masonry plumb with level accurately spaced courses.
 - 3. Lay out coursing before setting to minimize cutting closures. Completely fill head and bed joints with mortar. Slushing after unit is set is not permitted. Units requiring shifting or realignment after being laid shall be removed and relaid with fresh mortar.
 - 4. In exposed work, do not use masonry units with chips, cracks, voids, discolorations or other defects which

might be visible or cause staining in the finished work. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

5. Unless otherwise stated, use facing brick and colored mortar to a minimum of three courses below finish grades, and sidewalks.
6. Pattern Bond: Unless otherwise noted lay exposed masonry in bond pattern. Lay concealed masonry with all units in a wythe bonded by lapping not less than two inches. Bond and interlock each course of each wythe at corners. Do not use units with less than four inches horizontal face dimensions at corners or jambs.
7. Built-In Work: As construction progresses, built-in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
8. Field Quality Control: Tests and evaluations listed below will be performed during construction for each 5,000 sq. ft. of wall area or portion thereof.
 - a. Mortar properties will be tested per property specification of ASTM C270.
 - b. Mortar composition and properties will be evaluated per ASTM C780.
 - c. Grout compressive strength will be sampled and tested per ASTM C1019.
 - d. Prism Test Method: For each type of wall construction indicated, masonry prisms will be tested per ASTM E447, Method B. Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.

C. Joints:

1. Joint finish, thickness and coursing of joints shall match existing masonry work at adjacent buildings.
 2. Cut joints flush leaving face of units clean and free of mortar. Tool exposed joints as the mortar takes its initial set. Tool head joints first. Apply sufficient pressure during tooling to compact mortar firmly against units providing smooth, weathertight, finished joint for exterior masonry.
- D. Horizontal Joint Reinforcing: Install joint reinforcing 16 inches on center vertically beginning with the first course above top of footing. Install in accordance with manufacturer's printed recommendations and this specification. Bond corners and intersections with prefabricated shapes as specified. Reinforcing shall be clean and free of any substance which might impair bond with mortar in joints.
- E. Joining: Step back unfinished work for joining with new work. Toothing may be resorted to only when approved by the Owner's Representative. Before new work is started remove loose mortar and expose joint bed.
- F. Protect masonry surfaces not being working on during construction work. At such time as rain or snow is imminent and work is discontinued protect work with waterproof membrane well secured in place.
- G. Brace walls during and after laying as necessary to prevent deformation or damage during masonry work is completed.

3.2 **MORTAR:**

- A. Mortar shall be thoroughly mixed using maximum amount of water consistent with satisfactory workability for bricklayer. Mix by machine only in such quantity as can be used within 2 hours after mixing. Retemper only as necessary to maintain proper consistency. Do not use mortar which has greatly stiffened or in which cementing material has started to set.
- B. Machine Mixing: Methods of measurement shall be such that proportions can be controlled with an error of not over two per cent. While the mixer is in operation, batch the mortar materials in the following order: Approximately 1/2 required water, 1/2 required sand, all required cement, then remainder of sand. Allow batch to mix briefly, then add water in small quantities until satisfactory workability for brick layer is attained.

NOTE: Admixtures shall be added in accordance with manufacturer's instructions. Mix mortar a minimum time of five (5) minutes after all materials have been added. Completely empty mixer drum before recharging next batch.

- C. Admixtures: Admixtures not specified will not be permitted in mortar. Anti-freeze compounds are not permitted.

3.3 POINTING AND CLEANING:

- A. Point and fill all holes and cracks in exposed joints with additional fresh mortar. If the mortar has hardened, the defect shall be chiseled out and the void filled solidly with fresh mortar and tooled as specified.
- B. Clean exposed masonry surfaces thoroughly, from top down, to remove stains and mortar deposited during construction. Clean with liquid cleaners 49 hours or more after the construction of the wall in accordance with manufacturer's written instructions. The use of acid solutions is prohibited. Rinse surfaces thoroughly with clean water immediately after cleaning. The use of stronger cleaning solutions or other cleaning methods, will require the specific approval of the Owner's Representative.

END OF SECTION

1.0 GENERAL**1.1 RELATED DOCUMENTS:**

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to the work of this section.

1.2 DESCRIPTION:

A. The work of this section includes the furnishing and installation of all electrical equipment, materials, labor, maintenance, testing and devices as shown on the electrical drawings and/or as specified herein, including but not limited to:

1. Conduit and Wire
2. Control Cabinet and Equipment
3. Lighting Panelboards
4. Lighting Fixtures
5. Wiring Devices
6. Poles
7. Service Equipment

B. The term "provide" shall mean furnish and install.

1.3 QUALITY ASSURANCE:

A. Codes and Standards:

1. The installation of all work under this section shall comply with all applicable codes, laws, standards and regulations. Nothing in the specifications shall be construed to permit deviation from these governing items.
2. Electrical material and equipment shall bear the UL label except where UL does not label such types of material and equipment. Materials, equipment and installation shall meet requirements of applicable codes and standards listed below:

National Electric Code –most recent edition	NEC
National Electrical Safety Code	NESC
Electrical Testing Lab	ETL
Underwriters Laboratories, Inc.	UL
Certified Ballast Manufacturing	CBM
National Electrical Manufacturers Association	NEMA
Illuminating Engineering Society	IES
Institute of Electrical & Electronic Engineers	IEEE
American National Standards Institute	ANSI

B. Qualifications of Workmen:

1. Provide sufficient qualified journeyman electricians who are thoroughly experienced with the materials and methods specified and familiar with the design requirement.
2. At least one qualified journeyman shall be present at all times during the execution of the work.
3. In acceptance or rejection in any portion of the electrical work, no allowance will be made for lack of skill on the part of the workmen.

1.4 INTENT OF DRAWINGS AND SPECIFICATIONS:

- A. The implied and stated intent of the drawings and specifications is to establish minimum acceptable quality standards for materials, equipment and workmanship, and to provide operable electrical and mechanical systems in every respect.
- B. The drawings are diagrammatic only, intending to show general arrangement and location of system components. Due to the small scale of the drawings, and to unforeseen job conditions, all required offsets and fittings may not be shown, but shall be provided at no change in contract price.
- C. All work shall be accurately laid out and coordinated with other trades to avoid conflicts and to provide maximum accessibility for operation and maintenance.

1.5 SUBMITTALS:

- A. Submit shop drawings of the electrical materials to the A-E for review in accordance with the provisions of Division 01 of these specifications.
- B. The following is a list of those items required to be submitted:
 - 1. Wiring Devices, Contactors
 - 2. Wire and Cable
 - 3. Control Wiring Diagrams
 - 4. Panelboards
 - 5. Fuses
 - 6. Poles
 - 7. Service Equipment
 - 8. Lighting Fixtures and Accessories
 - 9. Footcandle computer printouts for each field. A printout of spill light levels at the property line.
 - 10. A written description of method/equipment utilized to achieve spill control at softball field No. 1.
 - 11. Aiming diagrams for all fixtures with NEMA type for each fixture.
- C. Contractor shall not begin fabrication or work which requires submittals until return of submittals with Engineer's approval.

1.6 SUBSTITUTIONS:

- A. Within 30 days after contract date, submit to Engineer a complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor.
- B. Contractor's Options:
 - 1. For products specified only by reference standard, select any product meeting that standard.
 - 2. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.
 - 3. For products specified by naming one or more products or manufacturers and "or equal", contractor must submit a request as for substitutions for any product or manufacturer not specifically named.
- C. Substitutions:
 - 1. For a period of 30 days after contract date, the Engineer will consider written requests from the Contractor for substitution of products.
 - 2. Submit a separate request for each product, supported with complete data, with drawings and samples as appropriate, including:
 - a. Comparison of the qualities of the proposed substitution with that specified.
 - b. Changes required in other elements of the work because of the substitution.

- c. Effect on the construction schedule.
 - d. Cost data comparing the proposed substitution with the product specified.
 - e. Availability of maintenance service, and source of replacement materials.
- 3. The Engineer shall be the judge of the acceptability of the proposed substitution.
- D. Contractor's Representation:
 - 1. A request for a substitution constitutes a representation that Contractor:
 - a. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.
 - b. Will provide the same warranties or bonds for the substitution as for the product specified.
 - c. Will coordinate the installation of an accepted substitution into the work, and to make the work complete in all respects.
 - d. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
 - E. The engineer will review the requests for substitutions with reasonable promptness, and notify Contractor, in writing, of the decision to accept or reject the requested substitution.

1.7 VISIT TO THE SITE:

All persons proposing to submit quotations for work in accordance with these plans and specifications are expected to visit the site of the work covered by the plans and specifications and are to familiarize themselves with existing conditions as they affect the work of this section of the specifications. Claims resulting from a failure to visit the site or inspect the existing conditions will not be considered.

1.8 EXCAVATION AND BACKFILL:

- A. This contractor shall provide all excavation and backfill required for the work covered under this Division.
- B. Verify the location of all underground piping, foundations and any other underground utilities before commencing work. All existing underground utilities shall be protected from damage.
- C. Excavation shall be made to the proper depths. If excavation is carried below that required, the bottom shall be brought to the required elevation with sand fill, thoroughly compacted.
- D. Fill shall be clean sand or clay, free of trash, rock, or other debris. Excavated materials may be used, provided it can be readily compacted. All fill shall be mechanically tamped, shall be uniform throughout, and shall be sufficient at all locations to obtain a modified Proctor 95 rating.

1.9 OPERATING AND MAINTENANCE DATA:

- A. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.
- B. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

1.10 PAINTING:

- A. All steel surfaces not galvanized, factory-finished or of weathering type steel shall be cleaned free of all rust, primed and provided one finish coat of semi-gloss enamel of color and manufacturer approved by the Engineers.
- B. All factory-finished steel surfaces; boxes, enclosures, etc., shall be cleaned and retouched or repainted as necessary to provide a rust-resistant coating. Where painting or galvanizing is not specifically specified, ferrous devices, bolts, nuts, inserts, etc., shall be galvanized.

C. All nameplates shall be left unpainted and in a clean condition.

1.11 IDENTIFICATION:

Laminated nameplates shall be used on the exterior surfaces of all electrical apparatus. These laminated nameplates shall be of black and white Bakelite or similar material, machine engraved through the black layer to expose the white layer, with letter heights not less than 3/16 inches. Nameplates shall be secure with chrome plated screws. Manufacturer's standard nameplates will be acceptable if compatible with those used throughout the project, if approved by the Engineer.

1.12 WIRING AND ELEMENTARY DIAGRAMS:

Wiring and elementary diagrams for equipment as shown on the drawings are based on the product of the specified equipment manufacturer and are shown for convenience to aid in estimating the extent of the work involved. The equipment actually installed shall be wired and connected in accordance with the equipment manufacturer's recommendations and shall conform to details in approved wiring diagrams to be furnished by the equipment manufacturer. All equipment so connected shall be made to operate in a safe, proper and efficient manner.

1.13 EQUIPMENT TESTS:

- A. An operating test of the complete electrical system shall be made. System shall test free from grounds, shorts and other faults. Connections shall be for positive mechanical and electrical connection and continuity. Equipment shall be demonstrated to operate in accordance with the requirements of the plans and specifications. Contractor shall furnish all personnel and test instruments required. Performance of tests shall be made in the presence of the Owner's representative.
- B. The following tests shall be performed as a minimum:
 - 1. Control and Distribution Equipment:
 - a. Check the wire terminals, clean connections.
 - b. Check all control switches, alarm devices, indicating instruments for proper operation under normal and simulated abnormal conditions.
 - 2. Circuit Breakers: The following tests shall be performed:
 - a. Inspect each circuit breaker.
 - b. Check for loose connections.
 - c. Operate each circuit breaker manually.

1.14 WARRANTIES:

- A. All equipment installed under this Division of the work shall be warranted for a minimum of one year after the specified performance has been demonstrated and accepted by the Owner.
- B. During this warranty period, replace any and all defective equipment and parts at no cost to the Owner.

1.15 TEMPORARY POWER:

- A. The Contractor, at his own expense, shall make arrangements for the purchase of power or portable power and provide for the extension of utility power to the point of usage. The cost of power shall be included in the appropriate bid items to which it is appurtenant and shall include full compensation for furnishing all labor, materials, tools and equipment which may require power.

1.16 BRANCH CIRCUITS:

- A. In general, there is a number associated with each branch circuit outlet which identifies the particular branch
- Ecoff Elementary School Athletic Fields –Drive & Parking16010-4** **Resource Planners, Inc.**

circuit to which the device served by the outlet is to be connected. The circuit number indicated has been assigned only for reference and guidance, and is not intended to limit panelboard circuitry. All branch circuits shall be connected to breakers in accordance with circuit requirements and good industry practice. The balancing of all loads shall be included in the work of this DIVISION.

1.17 EQUIPMENT CONNECTIONS:

- A. Unless otherwise shown on the drawings or specified herein, it is the intent of this DIVISION to provide all electrical connections required to protect, properly operate, and control all electrical devices, and equipment furnished and installed under this and other DIVISIONS of the specifications or shown on the drawings.

1.18 SETTING OF EQUIPMENT:

- A. The setting of equipment shall be carefully coordinated with the work and requirements of the other trades involved to ensure compatibility and to avoid conflicts.
- B. Equipment, base mounted on concrete or masonry slabs, pads and piers, or mounted on stands, gratings, platforms, or other, shall not be set in any manner, except on the finished and permanent support.

1.19 INSPECTION:

- A. The installation shall be inspected on at least two (2) widely spaced occasions by a local inspection authority. Application shall be made to the local authority for such inspections in coordination with the owner.
- B. Inspections shall be made for compliance with the power company requirements, the National Electrical Code and any local codes.
- C. A copy of inspection reports shall be promptly sent to the Contractor, to the Owner and to the Engineers, including a Certificate of Compliance on completion of the work.

1.20 UTILITY COMPANY REQUIREMENTS:

- A. **The Owner shall make application for electrical services in coordination with the Contractor.**

1.21 PERMITS:

- A. **The Contractor shall pay for permits, inspections and other costs incidental to providing electrical installations.**

1.22 CONTRACTOR'S RECORD DRAWINGS:

- A. The Contractor shall maintain a neatly marked set of record as-built drawings showing the installed location and routing of conduits, trays, cables, junction boxes, pull boxes, outlets and interconnection circuits, etc.

END OF SECTION

1.0 GENERAL**1.1 DESCRIPTION:**

- A. All excavating and backfilling required to execute this work.
- B. Furnish all labor, materials, and equipment, and perform all work required to complete the EARTHWORK indicated on the Drawings and specified herein. Earthwork shall include, but not be limited to, the following:
 - 1. Preparation of grade and excavation required for equipment pads.
 - 2. Trenching and backfilling required for underground wiring.
 - 3. Drilling of holes required to set poles.

- 1.2 **PROTECTION:** Use all means necessary to protect all material of this section before, during and after installation and to protect all objects designated to remain.

2.0 PRODUCTS**2.1 BACKFILL:**

- A. All backfill material shall be on site soil free of all stones, rocks, debris or deleterious substance.
- B. Crushed stone fill under and around poles shall be Virginia Highway Department size #57.

3.0 EXECUTION**3.1 EXCAVATION AND BACKFILL:**

- A. Trenches for laying of direct burial cable or conduit shall be excavated with a trenching machine to a depth to provide a minimum cover of 30" after the conduits are installed. Widths of trenches shall be no wider than is necessary to accomplish the installation. The plowing in of direct burial cable will not be permitted.
- B. Backfilling shall not be made until wiring or conduit has been inspected by Owner's representative. Backfill shall be placed by hand to a depth of 6" over the direct burial cable or conduit and compacted by hand tamping. Prior to further backfill, apply a continuous yellow permanent warning strip which suitably identifies the characteristics and danger of the direct buried cable or conduit below. Backfill above the warning strip shall be applied and piled on to above normal and thoroughly compacted with tampers with excess left to allow for reasonable settlement. All cables or conduit shall be left covered at the end of the day. Backfill within 15 feet of poles and 5 feet of roads, walks and equipment pads shall be compacted in layers for the full depth of the trench to obtain a Modified Proctor 95 rating.

- 3.2 **BARRICADES:** Provide temporary barricades required to properly guard the work during construction and to insure safety of workmen and the public.

END OF SECTION

1.0 GENERAL

- 1.1 Raceways shall be provided as indicated on the drawings. All conduit shall be UL listed and so labeled.
- 1.2 Raceways shall be installed as a complete system without wires and shall be continuous from outlet to outlet and from fitting to fitting. Raceways shall be mechanically and electrically connected to all boxes and fittings and shall be properly grounded.
- 1.3 Where conduit and other raceway sizes are not specifically shown on the plans, conduits shall be sized in accordance with the requirements of the NEC.
- 1.4 All raceways shall be Rigid Galvanized Steel or Intermediate Steel Conduit unless otherwise indicated on the drawings or in these specifications. PVC may be utilized below grade.

2.0 PRODUCTS

- 2.1 Rigid Galvanized Steel (RGS) shall be manufactured by Allied, Triangle, Republic, or approved equal, in accordance with UL 6 and ANSI C80.1. Conduit shall be low carbon, hot-dipped galvanized inside and out, with threaded ends, 1/2 inch minimum size. Fittings shall be cast iron or alloy steel, threaded, galvanized.
- 2.2 Intermediate steel conduit (IMC) shall be manufactured by Allied, Triangle, Republic, or approved equal, in accordance with UL 1242. Conduit shall be low carbon, hot-dipped galvanized inside and out, with threaded ends, 1/2 inch minimum size, 4 inch maximum size. Fittings shall be cast iron or alloy steel, threaded, galvanized.
- 2.3 Polyvinyl Chloride (PVC) conduit and fittings shall be in accordance with UL 651, NEMA TC-2 and TC-3, and solvent cements shall be in accordance with ASTM D 2564.

Polyvinyl Chloride (PVC) power duct, type EB, shall be in accordance with UL 651, NEMA TC-6 and TC-8.

Schedule 40 Electrical Plastic Conduit: Designed for normal duty in exposed or concealed applications above ground or for underground installation without concrete encasement. Made of polyvinyl chloride (EPC-40-PVC).

- 2.4 **INSULATED BUSHINGS:** Type B or SBT, as applicable, by O-Z Gedney or series B1900, series BU500 or series TC700, as applicable, by Steel City.

- 2.5 **PULLING IN WIRE:** Provide No. 14 galvanized iron or 5/32 inch polyethylene rope.

- 2.6 Thread lubricant/sealant shall be Crouse-Hinds type STL or T & B Kopr-Shield except, when required on joints for heat producing elements such as lighting fixtures, it shall be Crouse-Hinds type HTL.

3.0 EXECUTION

- 3.1 Rigid steel conduit and IMC shall be installed with threaded fittings and couplings. Where conduits terminate in a threadless opening, locknuts shall be provided both inside and outside of the box or enclosure and the conduit end shall be fitted with an insulating bushing. Where bonding is required, the end of the conduit shall be equipped with an insulated metallic grounding and bonding bushing.
- 3.2 All metallic couplings, connectors and fittings shall be malleable iron or steel and finished with zinc plating or by galvanizing.
- 3.3 All conduits shall be plugged after installation to prevent the entrance of construction dirt and debris. Conduits shall be clean before wires are pulled.

- 3.4 In wet or damp locations, all fittings shall be installed with suitable watertight gaskets.
- 3.5 Conduit exposed to the weather, embedded in concrete or masonry areas shown on the drawings shall be rigid steel conduit or IMC. Conduit run underground shall be rigid steel conduit, IMC or rigid non-metallic conduit.
- 3.6 **CONNECTION OF CONDUIT TO SHEET METAL BOXES AND ENCLOSURES:**
- A. Connection to NEMA 3R, 4, 4X, and 12 type boxes: Install insulated bushings and sealing locknuts or hubs.
 - B. When conduits enter floor mounted enclosures from below and there is no sheet metal to which to attach; install grounding bushings on the conduit. Bond bushings to ground bus using a conductor the same size as required for an equipment grounding conductor sized for the given circuit.
 - C. Install sealing bushing within all conduits which have entered an enclosure from outside, whether from above or below grade.

END OF SECTION

1.0 GENERAL

- 1.1 All conductors shall be copper of the number and AWG sizes shown on the drawings and sized to equal or exceed the requirements of the NEC. Insulation shall be rated for 600 volts. Where not shown otherwise, wiring shall be not less than No. 12 AWG.
- 1.2 All conductors shall be in conformance with NEMA WC-3 (rubber-insulated wire and cable), WC-5 (thermoplastic-insulated wire and cable), and WC-7 (cross-linked-thermosetting-polyethylene-insulated wire and cable) for the transmission and distribution of electrical energy.
- 1.3 Each coil of wire shall be delivered to the job in its original unbroken wrapping bearing Underwriter's Laboratories listing.
- 1.4 All conductors shall be copper, Type B stranded.
- 1.5 Conductors No. 6 and smaller shall be identified by a continuous insulation color. Conductors larger than No. 6 shall be identified by three laps of colored tape equal to Scotch #35 at each point of access to the conductors. Color coding shall be as follows:

	120V	480V
Phase A Conductor -	Black	Brown
Phase B Conductor -		Orange
Phase C Conductor -		Yellow
Grounded (Neutral) Conductor -	White	Grey
Grounding Conductor -	Green	Green

- 1.6 Number code all control instrument wiring at all points of access, including junction boxes.
- 1.7 All wire sizes shown on the drawings are based upon the use of copper conductors with 75 degrees C rated insulation.

2.0 PRODUCTS

- 2.1 Conductors inside cabinets shall have moisture and heat resistant thermoplastic insulation, type "THW", "THWN", "THHN", or "XHHW", rated for 600 volts unless other types are required by the Code.
- Type "THHN" shall not be used in wet or damp locations and, where used, shall have an ampacity rating based on the temperature rating of the termination lugs, equipment, devices, etc. Conductors shall be equal to GENERAL ELECTRIC, ROME, AMERICAN, ANACONDA, TRIANGLE, SOUTHWIRE, or OKONITE.
- 2.2 Unless otherwise indicated, conduit sizes shown on the drawings are based upon the use of type THWN insulated conductors. Conduit sizes shall be increased where required by the NEC for the type insulation used.
- 2.3 Conductors installed direct-buried underground outside of building shall be alloy coated, type "UF" or type RHH-RHW "USE". Conductors shall be equal to General Electric, Rome, Anaconda, Southwire or approved equal.
- 2.4 Control wiring may be No. 14 AWG except where length of runs would not permit proper operation of the controls or where larger sizes are required by code.

- 2.5 Terminal strips shall be Barrier type, rated 600 volts.
- 3.0 **EXECUTION**
- 3.1 Provide all wire and cable of AWG sizes indicated on the drawings and as specified or required to provide a complete installation.
- 3.2 Splices in No. 8 and smaller conductors shall be made with screw type connectors listed by UL as 600 volt pressure cable connectors for branch circuit and fixture splicing applications and shall be equal to IDEAL "WING NUTS" or SCOTCHLOK Spring Connectors. Splices in copper conductors larger than No. 8 shall be made with Thomas and Betts solderless connectors with molded composition covers.
- 3.3 Install wiring in conduit unless otherwise shown. Install splice-free conductors within ducts, conduits or earth.
- 3.4 Conductors shall be continuous from outlet to outlet with splices made only in pull, outlet or junction boxes.
- 3.5 Insulate splicing connectors to at least 200 percent of insulation. Use pre-stretched tubing connector insulators, 3/M PST, for No. 2 and larger conductors. Pull conductors using recognized methods and equipment leaving eight inches (minimum) of wire at junctions for connections.
- 3.6 Use UL listed compound as required to facilitate pulling. Complete connections and clean out conduit system before pulling wire.
- 3.7 Form and tie all wiring in panelboards, switchboard, and control panels utilizing wire ties equal to "TY-RAP".

END OF SECTION

1.0 GENERAL

- 1.1 Install outlet, pull, and junction boxes where shown on the drawings, and where required for changes in direction, at junction points, and to facilitate wire pulling. Furnish box sizes in accordance with NEC unless larger boxes are indicated. All boxes shall be complete with covers.

2.0 PRODUCTS

- 2.1 Provide concrete boxes for underground work unless otherwise indicated on the drawings. Furnish steel frames and cover with cover attached to frame with hexagon head, brass or bronze cap screws, 3/8 inches in diameter. Provide rubber gasket for sealing between cover and frame. Paint cover with two coats of heavy asphaltum.

3.0 EXECUTION

- 3.1 Coordinate location of any splice boxes with site work.

END OF SECTION

1.0 GENERAL

- 1.1 Provide boxes, complete with cover or device plate for switches, receptacles, or other similar devices, or where required for pulling or joining branch circuit wiring.

2.0 PRODUCTS

- 2.1 Use cast boxes, zinc-cadmium finish malleable iron, for exposed work within 8 feet above finished floor levels, and for exposed or concealed work in wet, damp or exterior locations. Cast boxes shall be series FD by Crouse-Hinds, Appleton, or RACO.
- 2.2 Provide covers and gaskets with conduit bodies, of a design suitable for the application. Provide watertight conduit bodies in damp or wet locations. Conduit bodies shall be cast ferrous alloy, galvanized, as manufactured by Crouse-Hinds, Pyle National, Killark, or Appleton.

3.0 EXECUTION

- 3.1 Exterior receptacles shall be mounted in weatherproof box suitable for installation.

END OF SECTION

1.0 GENERAL

- 1.1 Furnish and install all wiring devices as shown and as specified.
- 1.2 All wiring devices shall be specification grade with provisions for back wiring and side wiring with captively held binding screws.
- 1.3 All receptacles shall be of the grounding type.

2.0 PRODUCTS

- 2.1 Furnish and install wiring devices at all locations shown on the drawings, complete with all mounting devices and other appurtenances where required. All wiring devices shall be the product of a single manufacturer except as specifically stated otherwise. The catalog numbers of the devices herein specified are based on those of Leviton. However, equal devices as manufactured by Hubbell, General Electric, Bryant, or Slater will be acceptable. If other than Leviton devices are to be used, a list of comparative catalog numbers shall be furnished to the Engineer.

2.2 FURNISH DEVICE PLATES WITH OPENINGS TO SUIT DEVICES AS FOLLOWS:

Weatherproof devices shall have gasketed, cast metal cover and plate, UL listed for wet locations.

2.3 DEVICE PLATE MATERIALS SHALL BE AS FOLLOWS:

- A. Cast Metal: Die cast profile, ribbed for strength, flash removed, primed with grey enamel, furnished complete with four mounting screws.
- B. Gaskets: Resilient rubber or closed cell foam urethane.

2.4 RECEPTACLES SHALL BE SPECIFICATION GRADE, BACK AND SIDE WIRED, GROUNDING TYPE, CATALOG NUMBERS AS FOLLOWS:

- A. Exterior receptacles shall have gasketed weatherproof covers.
- B. Ground Fault Receptacles (GFI): 20A, 125V, NEMA 5-20R, #6399.

- 2.5 Control relays shall have 120 volt coils with the number of contacts as shown. Relays shall be electrically held with contact ratings as shown.

- 2.6 Lighting contactors shall be of the pole arrangement as shown on the drawings. Contactor shall be of the open type rated for 480 volts and continuous duty amps as indicated on the drawings. Coil voltage shall be 120 volts. Unit shall be Square-D class 8903 Type S or approved equal by GE or Westinghouse.

3.0 EXECUTION

- 3.1 Install receptacles as indicated on the drawings.

END OF SECTION

1.0 GENERAL

- 1.1 Provide enclosures for service, distribution and control equipment as shown on the drawings.
- 1.2 Exterior enclosures shall be freestanding or channel mounted as shown on the drawings.
- 1.3 Anchor bolts for mounting enclosures to concrete base shall be set in concrete. No exception will be taken to this requirement.

2.0 PRODUCTS

- 2.1 Exterior enclosures shall be NEMA 4.
- 2.2 Exterior enclosures shall be fabricated from stretcher level steel, minimum 10 gauge material, with continuous welded seams. Exterior doors shall be mounted with continuous hinge and provided with clamps on remaining sides to insure watertight seal of neoprene gaskets. Enclosures shall be finished interior with white enamel and exterior with durable enameled finish suitable for exterior installation. Finish shall be applied over phosphatized surfaces and shall be approved by the Owner's representative. Hinges shall be stainless steel. Fiberglass enclosures shall also be acceptable.
- 2.3 Interior of enclosure shall be fitted with full size 12 gauge white enameled finished steel panels for mounting of panelboards, contactors, relays, etc.
- 2.4 Enclosures shall be UL listed, entirely suitable for exterior installation and shall be equal to products manufactured by Hoffman Engineering Company, Bulletin 4, Vynco, Robroy or Hennessy.
- 2.5 Enclosure shall be equipped with a heavy duty hasp for owner furnished padlock.

3.0 EXECUTION

(not applicable)

END OF SECTION

1.0 GENERAL

- 1.1 Electrical service will be supplied by Virginia Power, 11200 Ironbridge Road, Chester, Virginia 23831, (804) 751-4082.
- 1.2 The power company will furnish a 480 volt, three phase, 3 wire, 60 Hz underground service to the distribution cabinet.
- 1.3 **VIRGINIA POWER WILL PROVIDE THE FOLLOWING:**
- A. Transformer pad
 - B. Pad-mounted transformer
 - C. Primary conductors to the transformer
 - D. Grounding at pad
 - E. Cables from transformer secondary to CT cabinet
 - F. Meter base (for installation by customer) and meter
- 1.4 **THE CONTRACTOR SHALL PROVIDE THE FOLLOWING:**
- A. Main service disconnect and main service distribution panel
 - B. Grounding at service entrance
 - C. All excavation and backfill as required
 - D. 4" (minimum) rigid galvanized steel conduit and cables from control cabinet to CT cabinet
 - E. Conduit seals per NEC 230-8.
 - F. Installation of meter base furnished by Power Company.
- 1.5 Contractor shall coordinate all requirements and provide all appurtenances, equipment, labor, etc. as required to provide a complete electrical service installation.
- 1.6 **Exact available fault current values at the service connection point will be determined by the Power Company after the project is awarded. Verify equipment fault current interrupting capacity requirements prior to ordering electrical distribution equipment. Provide a copy of the Power Company's calculated maximum available fault current to the engineer's office.**
- 1.7 **The Owner will pay all charges levied by the Power Company for the underground service. The Contractor shall assist the Owner with the application for electrical service.**

2.0 PRODUCTS

- 2.1 All materials shall be in accordance with the Power Company's requirements and as specified.

3.0 EXECUTION

- 3.1 Installation shall be in strict accordance with the Power Company's requirements and specifications.
- 3.2 Backfilling shall be compacted to achieve at least a modified Proctor 95 rating.

END OF SECTION

1.0 GENERAL

- 1.1 Grounding shall be installed in accordance with the 1996 edition of the National Electrical Code and shall include ground and equipment grounds for all electrically operated equipment.
- 1.2 Grounding conductors shall be run with all circuits and be bonded to all equipment. Grounding conductors shall be installed elsewhere as shown.
- 1.4 The grounding system shall be bonded together and effectively ground all exposed, non-energized metal surfaces containing energized parts, devices or conductors, all metallic electrical raceways and the neutrals and cases of all transformers.
- 1.5 Resistance from the main ground electrode to ground shall not exceed 25 ohms. When measured values exceed this amount, install a sufficient number of grounding electrodes to lower the resistance to a value within the specified limit.

2.0 PRODUCTS

- 2.1 Service grounding conductor shall be bare stranded copper sized in accordance with NEC table 250-94.
- 2.2 Equipment grounding conductors in raceways shall be insulated copper sized in accordance with NEC table 250-95.
- 2.3 Direct buried ground connections shall be exothermic type Cadweld or Thermoweld.
- 2.4 Ground rods shall be 3/4" diameter x 8' copper clad steel.

3.0 EXECUTION**3.1 POWER SYSTEM GROUNDING:**

- A. Circuit Grounding: Install grounding bushings, grounding studs, and grounding jumpers at control cabinets and panelboards.
- B. Bonding Jumpers: Provide green insulated conductor, size correlated with over-current device protecting the wire, attached to grounding bushings on conduit, to lugs on boxes and other enclosures.
- C. Light Pole Grounding: Provide direct-bury ground conductor with green insulation to lighting standards. Connect to corrosion-resistant ground stud or ground clamp to feed-in point ground. Provide each outside light pole with one ground rod.
- D. A grounding conductor shall be installed and solidly connected to all electrical equipment such as panelboards, conduits, etc., in accordance with code requirements and as shown on the drawings. Connections to the equipment may be bolted or screwed using corrosion resisting bolts, nuts and screws as required for a solid and permanent connection.
- E. Grounding conductors, connections, fittings, etc., shall not be installed in cinder fill or covered with soil containing cinders or other corrosive materials.
- F. Sub-surface grounding conductors shall be installed with sufficient slack so as to eliminate any strain at connections caused by earth movement.
- G. Bonding jumpers shall be installed. Bare grounding conductors, where passing through steel sleeves, shall be bonded to the steel at entrance and exit.
- H. Upon completion of the grounding system installation and at such time as directed by the A/E, conduct a test to measure resistance to ground from the point of connection of the main grounding electrode conductor to the service equipment. The test shall be conducted in the presence of the Owner or his representatives. Provide all labor and test equipment, make test, and correct defective materials and/or workmanship disclosed by this test as part of the work and responsibility of this Division. Provide a copy of the test results to the engineers office for final evaluation and acceptance.

END OF SECTION

1.0 GENERAL

- 1.1 The panelboards shall be of the fully factory assembled type with ratings as shown.
- 1.2 The panelboard shall be of the same manufacturer as the overcurrent devices.

2.0 PRODUCTS

- 2.1 Panelboards shall be enclosed, dead-front safety type suitable for operation as shown on the drawings. Main and branch circuit device characteristics shall be as shown by schedules and details on the drawings.
- 2.2 Bus Bars shall be sized as required by the latest NEMA standards. Bus Bars shall be securely mounted and supported and shall not depend on overcurrent devices for support. Steel mounting pan shall be flanged for rigidity. Flat pans will not be acceptable.
- 2.3 The cabinet shall be fabricated from code gauge galvanized steel with a 3/4 " flange for rigidity and fastening of the trim. Gutter spaces shall meet the NEC requirements but in no case shall be less than 4" on all sides.
- 2.4 All circuit breakers shall be thermal-magnetic, quick-make, quick-break, over-center toggle mechanism, de-ion grids, and trip free on overload or short circuit. All multipole breakers shall have common trip. Handle ties are not acceptable. Minimum interrupting capacity shall be R.M.S. symmetrical and as indicated on the drawings.
- 2.5 All panelboard interiors shall be in accordance with the Underwriter's Laboratory Standards and so labeled.
- 2.6 Panelboards shall be General Electric or equal products of Westinghouse or Square D.
- 2.7 Trim shall be finished with baked enamel of the manufacturer's standard color.
- 2.8 Space where shown in panel schedules designates space for future protective devices and shall include bus and support components.
- 2.9 Panels known as "load centers" are unacceptable unless specifically noted otherwise on the drawings.
- 2.10 Breakers shall be bolt-on type unless "load centers" are specifically noted for installation.
- 2.11 Panelboards (where neutral indicated) shall be equipped with a solid neutral bus mounted on the opposite end of the enclosure from the main lugs. All panelboards shall also have a separate ground bus for ground connections.
- 2.12 Panelboard shall be mounted within an enclosure as indicated on the drawings.

3.0 EXECUTION

- 3.1 Panelboards shall have a type written directory indicating load served by each branch. Directory shall be installed inside cabinet, enclosed in a metal frame with a clear plastic cover.
- 3.2 Install cabinets so that center of top breaker or switch does not exceed 6'-6" above finished floor.
- 3.3 Circuits shall be arranged and numbered as indicated in schedules on the drawings.

END OF SECTION

1.0 GENERAL

- 1.1 ANSI publication C97.1 and all NEMA, NEC and UL standards shall apply.

2.0 PRODUCTS

- 2.1 Furnish and install complete sets of fuses for all switches requiring same, as indicated or required including those required in switchboards, motor controllers and motor control centers. Time current tripping characteristics of fuses serving motors or connected in series with circuit breakers shall be coordinated for proper operation. Fuses shall have voltage rating not less than the circuit voltage and shall be as manufactured by Buss, Gould-Shawmut or Federal Pacific Economy Fuse.
- 2.2 Fuses required for special applications shall be as shown or scheduled on the drawings.

3.0 EXECUTION

- 3.1 At each point of application, fuse all ungrounded conductors.
- 3.2 Where Class R fuses are specified, provide fuse rejection features at the fuse holders.

END OF SECTION

1.0 GENERAL

- 1.1 Poles for support of lighting fixtures shall be centrifugally cast or static cast with high frequency vibration prestressed concrete precast in steel forms, true to design to provide a dense natural concrete color finish. They shall be circular or square in cross-section and have uniform taper and smooth hollow cores to serve as cable passageway. At bottom of pole and 18" below anticipated grade elevation, an underground conduit feed opening shall be cast in and 20" above grade line a hand hole shall be cast in of sufficient size to permit pulling of cables. Hand hole shall be provided with a heavy cast aluminum and tamperproof screws. A cable exit as detailed shall be provided near top of pole as detailed.
- 1.2 This installation utilizes several sizes of poles for lighting the various fields, courts, and security lighting. The sports field lighting and portions of the security lighting are by separate contract. This contract involves security lighting fixtures, poles and wiring as indicated on drawings. Approximate lengths and minimum setting depths are indicated on the drawings. Contractor shall establish accurate grades and modify the setting depths as required to adjust for exact grade conditions.
- 1.3 Structural design of the poles shall be the responsibility of the manufacturer. Poles shall be designed and constructed so that the ultimate strength of the poles will meet or exceed the loading requirements of the American Association of State Highway and Transportation Officials "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" for wind velocities of not less than 90 mph and 1.3 gust factor.

2.0 PRODUCTS

- 2.1 Lighting fixture mounting cross arms shall be attached to the poles by means of clamps which secure angle sections welded to cross arm against and in recessed flat areas cast into the poles. The drawings detail the specific conditions for a specific product. The Contractor shall coordinate equipment purchased so that the poles are built to properly receive and secure cross arms in position. All such data shall be clearly shown in detail on shop drawing submitted for approval by the Owner's representative. Openings top and bottom shall be sealed with concrete.

2.2 MINIMUM REQUIREMENTS FOR POLE MATERIAL AND CONSTRUCTION ARE:

- A. Poles shall be machine made, prestressed, centrifugally spun concrete or prestressed static cast using steel forms.
 - B. Aggregate shall conform to ASTM C33 and shall be uniformly graded from a maximum size of 1/2" to 5% passing #100 sieve.
 - C. Cement shall conform to ASTM C150 Type I or III.
 - D. Water shall contain no quantities of alkalies, oil or organic matter which would be harmful to the quality of the concrete.
 - E. Reinforcing shall be placed to assure that no cracking shall occur during normal handling and setting. Concrete cover over pre-stressing wire shall be not less than 1/2".
 - F. The water cement ratio utilized shall produce a 28-day compressive strength concrete of 7000 psi. Concrete shall be steam cured to not less than 4900 psi compressive strength prior to transfer of pre-stressing forces.
 - G. The poles shall be cured using low pressure steam to maintain 175 degrees F maximum for a period of sufficient duration to develop adequate strength to allow handling and release of pre-stressing wires. The curing temperature shall be regulated so that temperature changes do not exceed 20 degrees F per hour during the initial 2 hours of curing and 60 degrees F per hour during the next 2 hours. Poles shall be stored as long as is necessary for the concrete to reach the specified compressive strength.
- 2.3 In addition to cast in flat recesses to accommodate attachment of lighting fixture crossarms suitable provisions shall be made for attachment of enclosures for remotely mounted ballasts. Shop drawings shall show in detail methods proposed, dimensions and details of ballast enclosures attachment method, etc.
- 2.4 The copper stranded lighting protection down conductor shown on the drawings shall be securely tied to the reinforcing and cast in place. At top and bottom adjacent to cable entry and exit openings, provide a 2" x 4" x 3/16"

copper plate cast into the concrete pole and bonded (brazed) to the ends of the stranded copper down conductor.

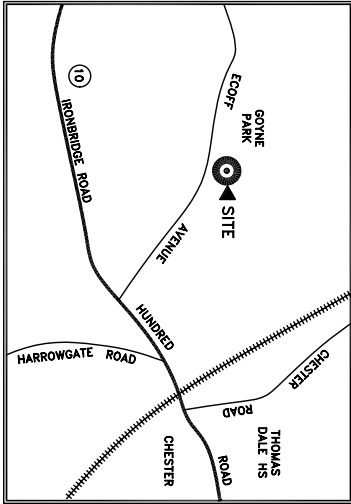
- 2.5 Poles shall be as manufactured by Bayshore Concrete Products, Cape Charles, Virginia or equals by Concrete Products, Inc., Sherman, Accord Industries or approved equal.
- 2.6 Provide galvanized climbing steps and inserts for steps as required. Both inserts and climbing steps shall be pre-cut and threaded prior to galvanizing and shall not be welded or cut in the field. These shall be provided for all poles.
- 2.7 All pole mounted devices (lights, steps, platform, etc.) shall be coordinated prior to fabrication. Pole shall not be drilled after delivery without written approval from the pole manufacturer and the owner.
- 3.0 **EXECUTION**
- 3.1 The setting depth and diameter of field placed backfill have been designed on the basis of lateral passive soil pressure of 400 pounds per square foot per foot of depth and free draining soil conditions. If these conditions do not exist, it shall be the Contractor's responsibility to notify the Owner's representative before proceeding.

END OF SECTION

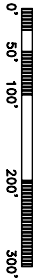
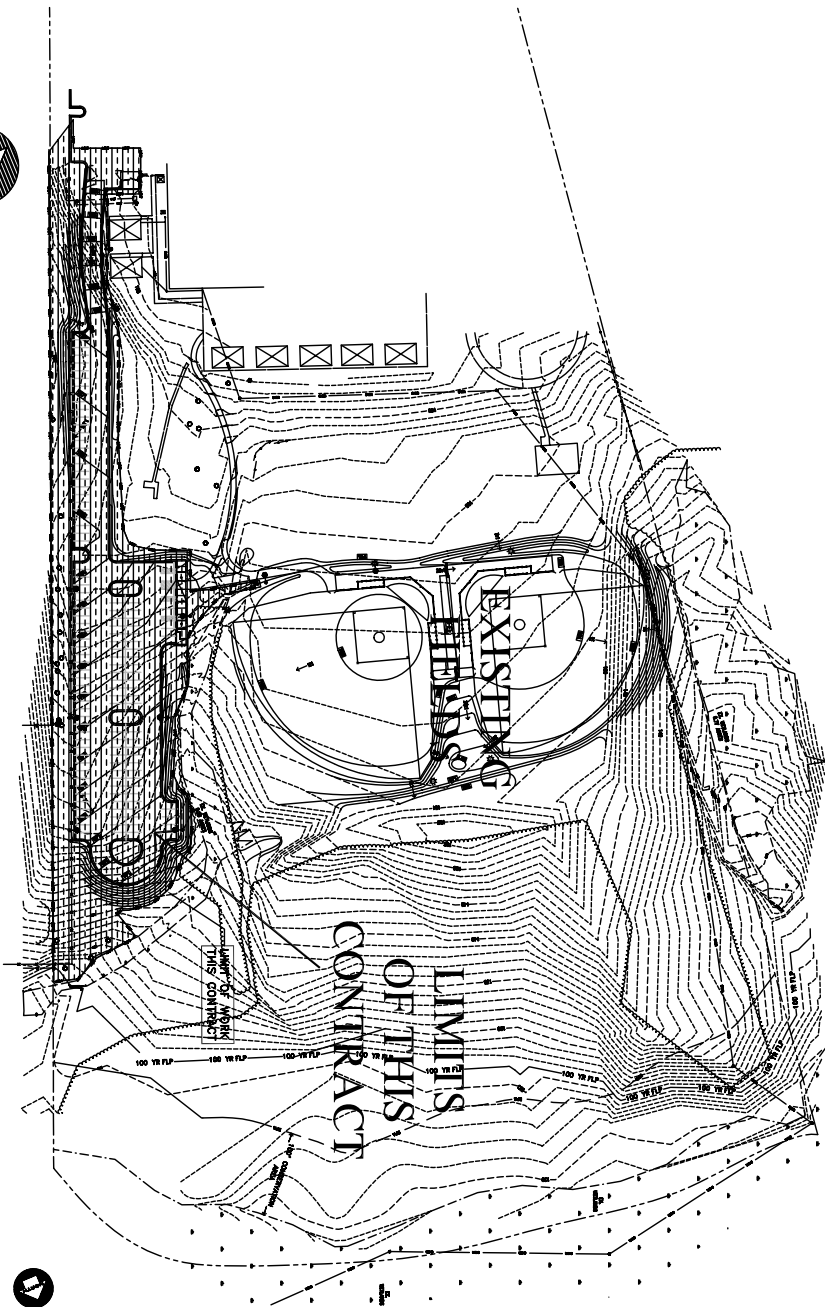
ECOFF ELEMENTARY SCHOOL

ATHLETIC FIELDS

DRIVE AND PARKING



VICINITY MAP



SITE MAP

SITE DATA:

PROJECT TITLE & ADDRESS:
ECOFF ELEMENTARY SCHOOL
ATHLETIC FIELDS
5200ECOFF AVENUE
CHESTERFIELD COUNTY, VIRGINIA

EX/PR. USE OF PROPERTY:
PUBLIC PARK

ZONING OF PROPERTY:
A

ACREAGE OF SITE:
27.8±

AREA OF DISTURBANCE:
6.5 ACRES

DEVELOPMENT DISTRICT:
EMERGING GROWTH

MAGISTERIAL DISTRICT:
BERMUDA

OWNER:
COUNTY OF CHESTERFIELD
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 40
MIDLOTHIAN, VA 23832
(804) 751-4133

CONTACTS:
STUART CONNOCK, Chesterfield County
(804) 751-4484
(804) 751-4486
PAUL R. MORETH, Resource Planners, Inc.
(804) 261-6967
(804) 264-3464 Fax

TAX MAP & PARCEL No.:
115-1-4 (PART OF)

GPIN No.:
784-656-7185-00000

CHESAPEAKE BAY COMPLIANCE NOTE:

The work of this project is the first step in implementing a masterplan which joins the Ecoff Elementary School playfields with the adjacent facilities at Goyne Park, forming a single County park. The combined acreage of both the Ecoff and Goyne sites totals 61.5 acres. The total post-development area of impervious cover over the combined sites totals 9.4 acres or 15.3%. This percentage of impervious cover is below that requiring a BMP by the Bay Ordinance, making the project, as proposed, in compliance with the Ordinance.

SIGNAGE NOTE:

ANY SIGN IN EXCESS OF EIGHT (8) SQUARE FEET REQUIRES A PERMIT. PERMITS MAY BE OBTAINED THROUGH THE BUILDING INSPECTIONS DEPARTMENT.

U/G UTILITIES NOTE:

ALL PROPOSED UTILITIES ARE TO BE INSTALLED UNDERGROUND INCLUDING ELECTRIC, TELEPHONE, AND CATV.

CONSULTANTS:

CARL E. DUNCAN, ENGINEER/SURVEYOR
POWHATAN, VIRGINIA
(BASIC DATA, TOPOGRAPHIC SURVEY, WETLANDS SURVEY)
LEO SNEAD, WETLAND & ENVIRONMENTAL SERVICES
RICHMOND, VIRGINIA
(WETLANDS DELINEATION)

GOVERNING CODES:

VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK,
THIRD EDITION, 1992
ROAD AND BRIDGES STANDARDS,
VOLUME 1, 1993
VIRGINIA DEPARTMENT OF TRANSPORTATION

INDEX OF DRAWINGS:

T 1	TITLE SHEET
C 1	LAYOUT PLAN
C 2	GRADING PLAN
C 3	EROSION CONTROL PLAN
C 4	BASE-BID PLAN
C 5	EROSION CONTROL DETAILS & SPECIFICATIONS
C 6	CONSTRUCTION DETAILS
C 7	CONSTRUCTION DETAILS
C 8	CONSTRUCTION DETAILS
C 9	DEMOLITION PLAN
S 1	STORM WATER PROFILES
P 1	PLANTING PLAN
E 1	SITE LIGHTING ELECTRICAL PLAN
E 2	SITE LIGHTING ELECTRICAL DETAILS

RPI

LANDSCAPE ARCHITECTURE · ENGINEERING

ARCHITECTURE

RECREATION DESIGN

RESOURCE PLANNERS, INC

311 NORTH-SIDE AVENUE, RICHMOND, VA 23228

PHONE (804) 261-6967

FAX (804) 264-3464



TITLE SHEET

ECOFF ELEMENTARY SCHOOL ATHLETIC FIELDS

DEPARTMENT OF PARKS AND RECREATION

COUNTY OF CHESTERFIELD, VIRGINIA

REVISIONS

1/10/00	
1/30/00	3/24/00
4/18/00	090
12/28/03	

DRAWN BY: BAJ

CHECKED BY: JMM

APPROVED BY: RMM

DATE: 12/28/99

SCALE: N/A

PROJECT NO.: 10568

10583DP_x.jhh

SHEET

11 OF 1

REVISED DRAINAGE STRUCTURE & PIPE SCHEDULE		
D/P RUNS_A	D/P RUNS_B	
NO. STRUCTURE J 16 UNBUILT CROSS FROM K	F IS 12" INLINE DRAIN--H-10 GRADE	
J IS 12" INLINE DRAIN--H-20 GRADE WITH CONC. APRON	TOP - 142.50	CONNECTIONS TO 8" OUT
INV. 8" OUT 142.80	INV. 8" OUT 142.80	
NO. STRUCTURE K	F IS 40" OF 8" @ 1.5%	
J IS 12" DRAIN BASIN--H-10 GRADE	TOP - 151.10	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE L	F IS 40" OF 8" @ 1.0%	
K IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE M	F IS 40" OF 8" @ 1.0%	
L IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE N	F IS 40" OF 8" @ 1.0%	
M IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE O	F IS 40" OF 8" @ 1.0%	
N IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE P	F IS 40" OF 8" @ 1.0%	
O IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE Q	F IS 40" OF 8" @ 1.0%	
P IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE R	F IS 40" OF 8" @ 1.0%	
Q IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE S	F IS 40" OF 8" @ 1.0%	
R IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE T	F IS 40" OF 8" @ 1.0%	
S IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE U	F IS 40" OF 8" @ 1.0%	
T IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE V	F IS 40" OF 8" @ 1.0%	
U IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE W	F IS 40" OF 8" @ 1.0%	
V IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE X	F IS 40" OF 8" @ 1.0%	
W IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE Y	F IS 40" OF 8" @ 1.0%	
X IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	
NO. STRUCTURE Z	F IS 40" OF 8" @ 1.0%	
Y IS 12" DRAIN BASIN--H-10 GRADE	TOP - 152.50	
INV. 8" IN 146.51	INV. 8" IN 146.20	
INV. 8" OUT 146.51	INV. 8" OUT 146.20	



DRAINAGE AREAS SCHEDULE	
AREA	ACREAGE
C	0.92 A
D	0.08 A
E	0.08 A
F	0.08 A
G	0.08 A
H	0.08 A
I	0.08 A
J	0.08 A
K	0.08 A
L	0.08 A
M	0.08 A
N	0.08 A
O	0.08 A
P	0.08 A
Q	0.08 A
R	0.08 A
S	0.08 A
T	0.08 A

DRAINAGE STRUCTURE SCHEDULE	
BASE BID ITEMS:	
INLETS/OUTLETS:	PRESS:
1. 30 LF 21" HOPE @ 3.8%	
2. 58 LF 12" HOPE @ 0.5%	
3. 40 LF 12" HOPE @ 0.5%	
4. 40 LF 12" HOPE @ 0.5%	
5. 165 LF 15" HOPE @ 1.38%	
6. 225 LF 18" HOPE @ 0.04%	
7. NO STRUCTURE	
8. 58 LF 12" HOPE @ 0.5%	
9. 40 LF 12" HOPE @ 0.5%	
10. 40 LF 12" HOPE @ 0.5%	
11. 32 LF 12" HOPE @ 3.31%	
12. 38 LF 12" HOPE @ 2.66%	
NO STRUCTURE	
1. 92" INLINE DRAIN (GRADED 20.000 BR. MIN.)	
2. 12" INLINE DRAIN	
3. 12" INLINE DRAIN	
4. 12" INLINE DRAIN	
5. 12" INLINE DRAIN	
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97. 12" INLINE DRAIN	
98. 12" INLINE DRAIN	
99. 12" INLINE DRAIN	
100. 12" INLINE DRAIN	

NOTE: SPOT ELEVATIONS & DRY GUTTER INDICATIONS FOR PAVED AREAS ARE SHOWN ON SHEET C6.

LEGEND

- PR. SECURITY LIGHT POLE
- PR. ATHLETIC LT. POLE W/ SECURITY FEATURE
- EX. LIGHT POLE
- PR. 8" CURED SCI 40 PVC SLEVE
- PR. DI-3A
- PR. MH-1
- PR. 12" PVC SQUARE DRAIN BASIN
- PR. 12" PVC SQUARE INLINE DRAIN
- PR. ES-1
- PR. STORM DRAIN PIPE
- EX. STORM DRAIN PIPE
- EX. DRAINAGE DITCH
- EX. INTERMEDIATE CONTOUR
- PR. INTERMEDIATE CONTOUR
- PR. INDEX CONTOUR
- EX. INDEX CONTOUR
- PR. TREE PROTECTION FENCING
- EX. TREE PROTECTION FENCING
- PR. TREE LINE
- DRAINAGE STRUCTURE DIVIDES
- PROPERTY LINE
- 100 YEAR FLOOD PLAN
- NON-TIDAL WETLANDS DELINEATION
- RESOURCE PROTECTION AREA
- LIMITS OF DISTURBANCE/GRADING

REVISIONS

1/30/00	DATE
3/26/00	DATE
4/8/00	DATE
1/26/03	DATE

APPROVED BY: RMA

SCALE: 1"=50'

PROJECT NO.: 0088

GRADING PLAN

ECOFF ELEMENTARY SCHOOL ATHLETIC FIELDS

DEPARTMENT OF PARKS AND RECREATION

COUNTY OF CHESTERFIELD, VIRGINIA

RPI LANDSCAPE ARCHITECTURE · ENGINEERING

ARCHITECTURE RECREATION DESIGN

RESOURCE PLANNERS, INC

311 NORTH-SIDE AVENUE, RICHMOND, VA 23228

PHONE (800) 564-6967

PAUL R. MORETH

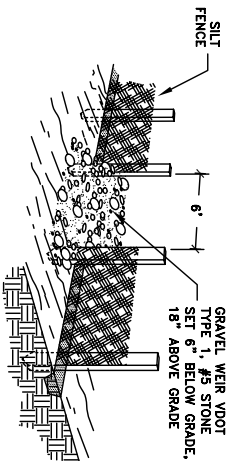
No. 00109

ARCHITECT

SHEET C2 OF 9

PROJECT NO.: 00PR0176

105834LR, x-grading



NOTE: [W] ON PLAN DENOTES GRAVEL WEIR LOCATION IN SILT FENCE
GRAVEL WEIR IN SILT FENCE
NOT TO SCALE

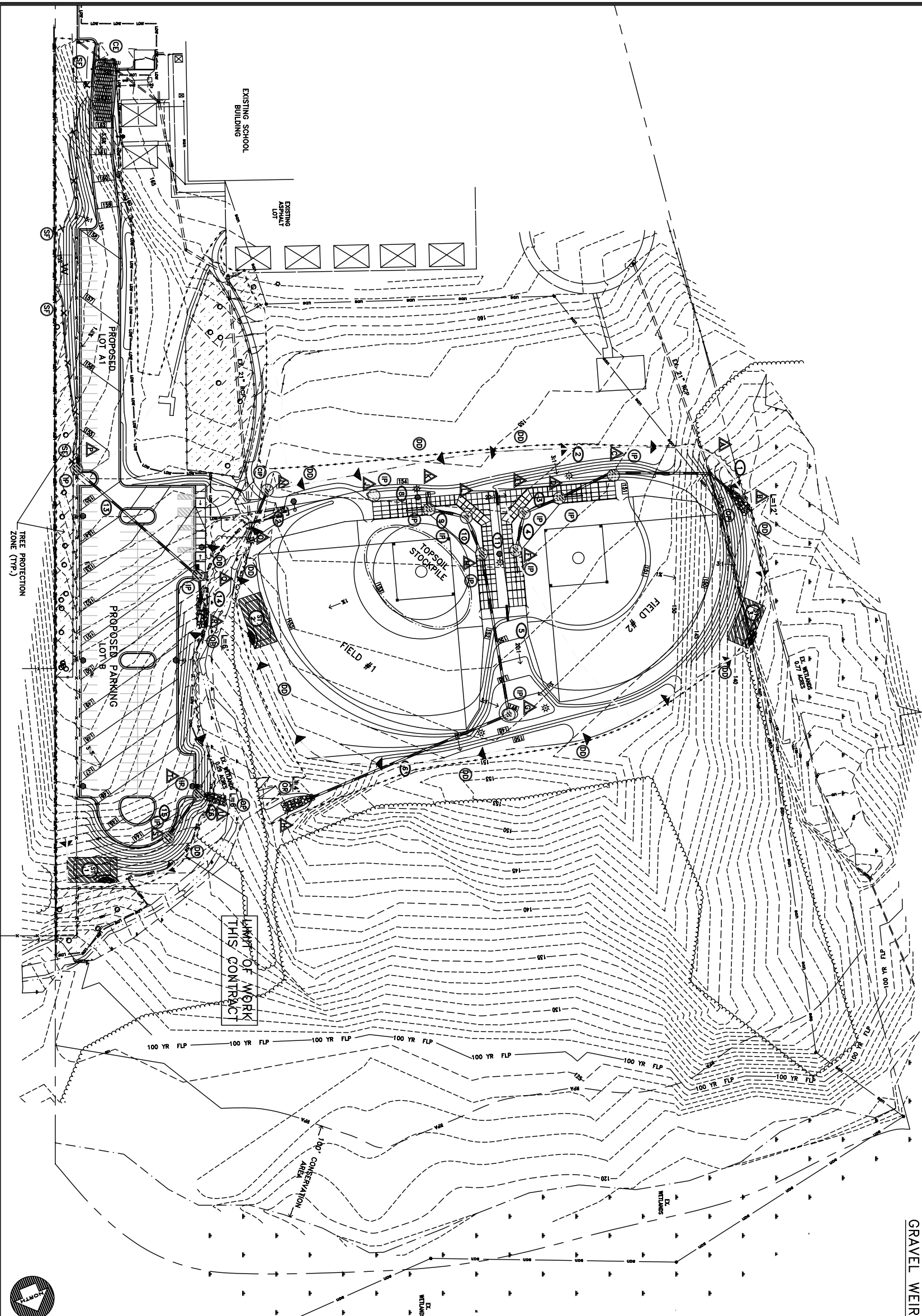
SEDIMENT TRAP #1: (ADDITIVE BID ITEM)	
DRAINAGE AREA	1.80 A
BOTTOM OF EXCAVATION	12'x40' @ 131.5
TOP OF EXCAVATION	28'x54' @ 135.0
WET STORAGE RECD	120.6 YD ³
WET STORAGE PROV'D	122.1 YD ³
TOP OF DAM	136.5
WIDTH OF DAM	2.0'
TOP OF OUTLET	135.5
LENGTH OF OUTLET	10.8'
TOTAL STORAGE RECD	241.2 YD ³
TOTAL STORAGE PROV'D	262.2 YD ³

SEDIMENT TRAP #2:	
DRAINAGE AREA	1.47 A
BOTTOM OF EXCAVATION	12'x42' @ 147.0
TOP OF EXCAVATION	24'x54' @ 150.0
WET STORAGE RECD	99 YD ³
WET STORAGE PROV'D	113 YD ³
TOP OF DAM	151.50
WIDTH OF DAM	2.5'
TOP OF OUTLET	151.50
LENGTH OF OUTLET	9'
TOTAL STORAGE RECD	197 YD ³
TOTAL STORAGE PROV'D	210 YD ³

SEDIMENT TRAP #3:	
DRAINAGE AREA	1.26 A
BOTTOM OF EXCAVATION	12'x35' @ 135.0
TOP OF EXCAVATION	24'x47' @ 138.0
WET STORAGE RECD	84.4 YD ³
WET STORAGE PROV'D	86.0 YD ³
TOP OF DAM	139.5
WIDTH OF DAM	2.0'
TOP OF OUTLET	138.5
LENGTH OF OUTLET	7.6'
TOTAL STORAGE RECD	169 YD ³
TOTAL STORAGE PROV'D	192 YD ³

EROSION CONTROL LEGEND		
NO.	TITLE	KEY SYMBOL
3.02	TEMPORARY STONE CONSTRUCTION	[CE]
3.05	SILT FENCE	[SF]
3.07	STORM DRAIN INLET PROTECTION	[IP]
3.08	CULVERT INLET PROTECTION	[CP]
3.09	TEMPORARY DIVERSION	[DD]
3.13	TEMPORARY SEDIMENT TRAP	[ST]
3.18	OUTLET PROTECTION	[OP]

LEGEND	
[SL]	PR. SECURITY LIGHT POLE
[AL]	PR. ATHLETIC LIGHT POLE
[LP]	EX. LIGHT POLE
[PP]	PROP. 6\"/>
[WH-1]	PR. WH-1
[BS]	PR. 12\"/>
[EW-6]	PR. EW-6
[ES-1]	PR. ES-1
[SDP]	PR. STORM DRAIN PIPE
[SDR]	EX. STORM DRAIN PIPE
[ID]	EX. INDEX CONTOUR
[IC]	EX. INTERMEDIATE CONTOUR
[IBD]	PR. INTERMEDIATE CONTOUR
[PTL]	EX. TREE PROTECTION FENCING
[EX]	EX. SPOCKMEN TREE LOCATION
[TL]	PR. TREELINE
[DA]	DRAINAGE AREA TO SEDIMENT TRAP
[PL]	PROPERTY LINE
[FPL]	100 YEAR FLOOD PLAIN
[NTW]	NON-TIDAL WETLANDS DELINEATION
[RPA]	RESOURCE PROTECTION AREA
[LDA]	LIMITS OF DISTRIBUTION/GRADING



SITE PLAN NO.: 00PR0176

SHEET
C3 OF 9

REVISIONS	1/30/00
	3/24/00
	4/8/00
	12/28/03
DRAWN BY: BJM	
CHECKED BY: JMM	
DATE: 10/26/99	
SCALE: 1\"/>	
PROJECT NO.: 0098	

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EROSION CONTROL PLAN

ECOFF ELEMENTARY SCHOOL ATHLETIC FIELDS

DEPARTMENT OF PARKS AND RECREATION

COUNTY OF CHESTERFIELD, VIRGINIA

RPI LANDSCAPE ARCHITECTURE · ENGINEERING

ARCHITECTURE RECREATION DESIGN

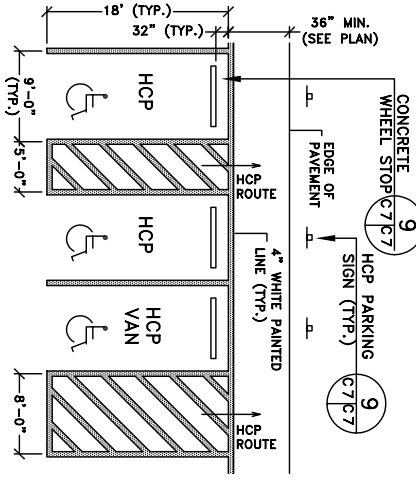
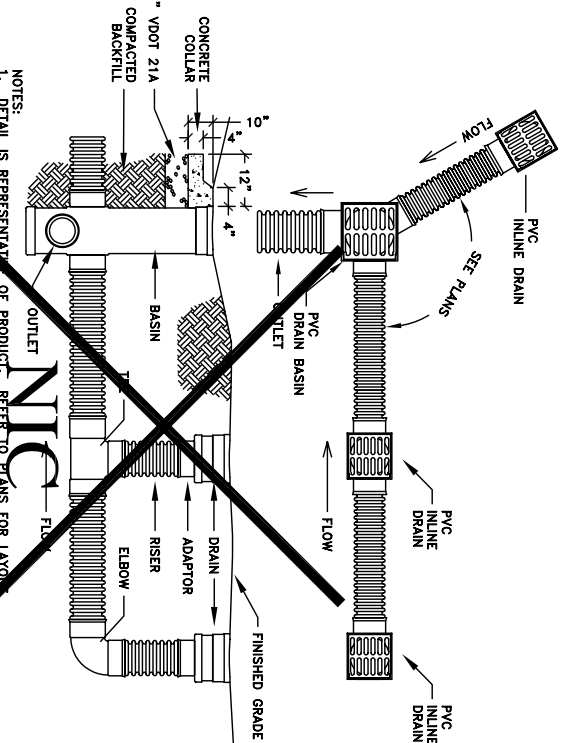
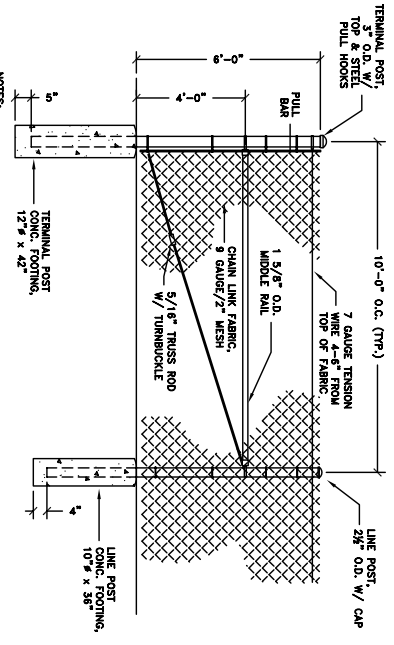
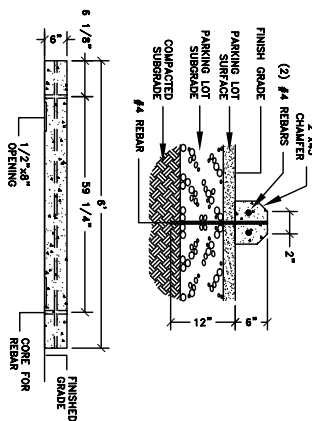
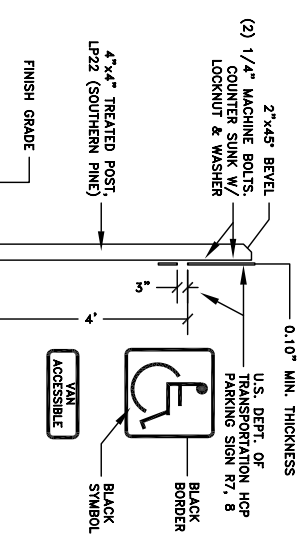
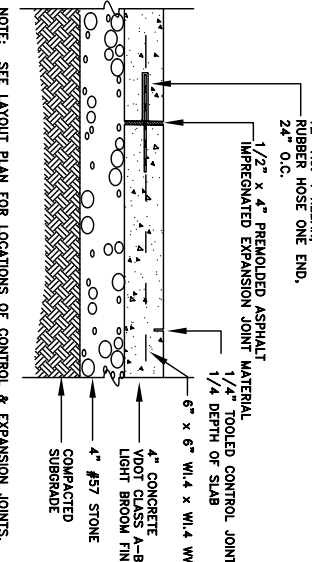
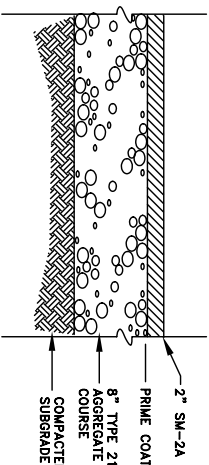
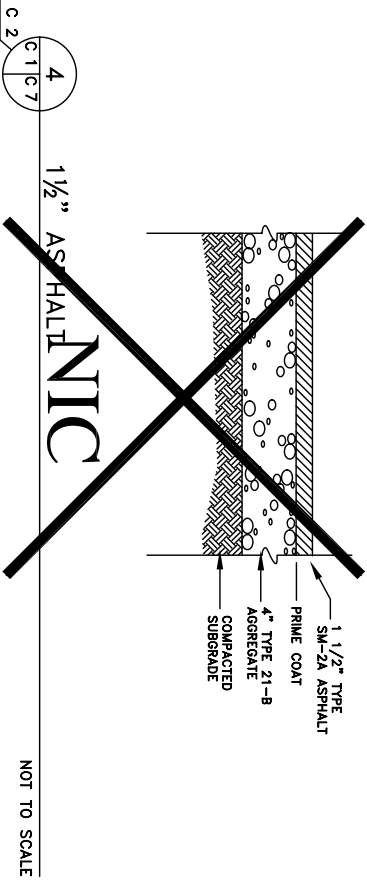
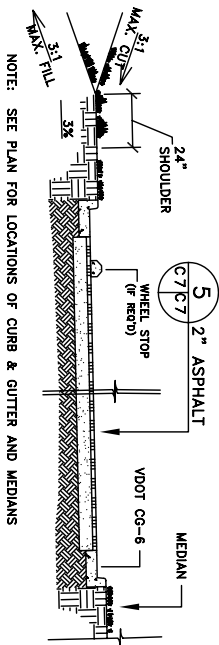
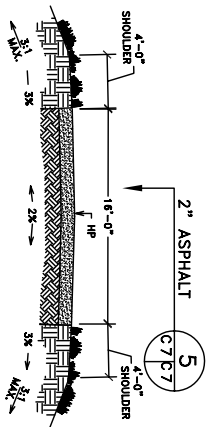
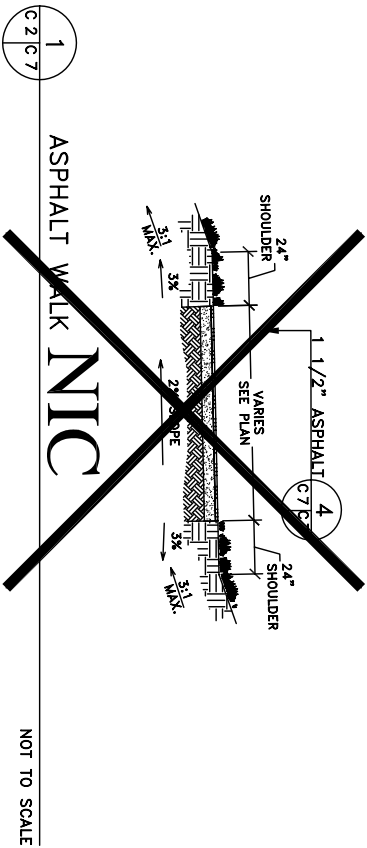
RESOURCE PLANNERS, INC

311 NORTH-SIDE AVENUE, RICHMOND, VA 23228

PHONE: (800) 261-6967

FAX: (800) 264-3464





SHEET C7 OF 9	
REVISIONS	1/10/00
	1/30/00
	3/24/00
	4/18/00
	1/25/03
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CONSTRUCTION DETAILS

ECCO ELEMENTARY SCHOOL ATHLETIC FIELDS

DEPARTMENT OF PARKS AND RECREATION

COUNTY OF CHESTERFIELD, VIRGINIA

RPI LANDSCAPE ARCHITECTURE · ENGINEERING

ARCHITECTURE · RECREATION DESIGN

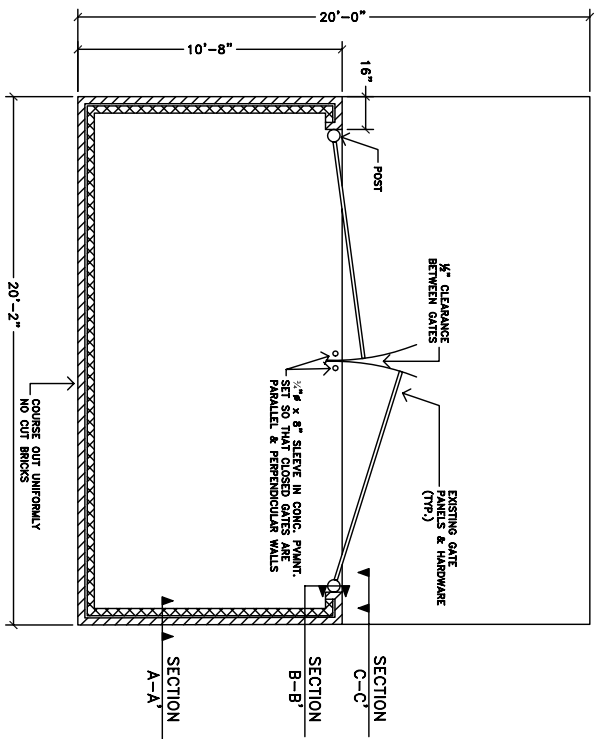
RESOURCE PLANNERS, INC

311 NORTH-SIDE AVENUE, RICHMOND, VA 23228

PHONE (800) 251-6967

FAX (800) 251-3464

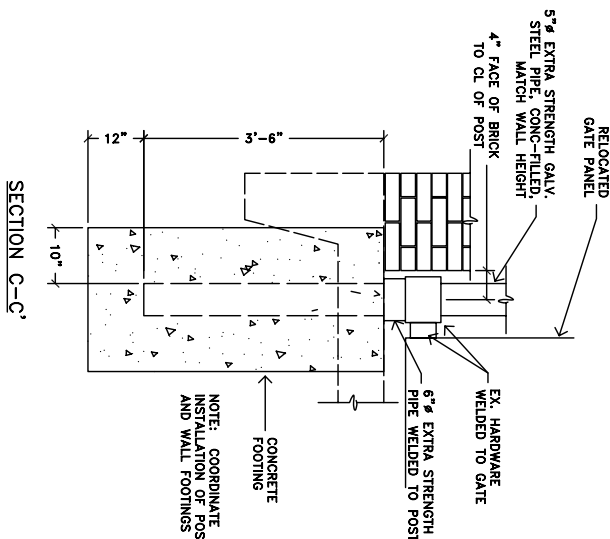
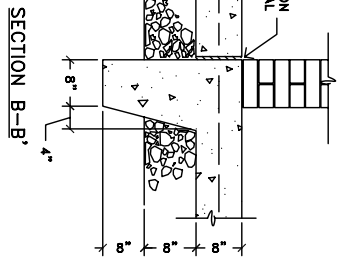
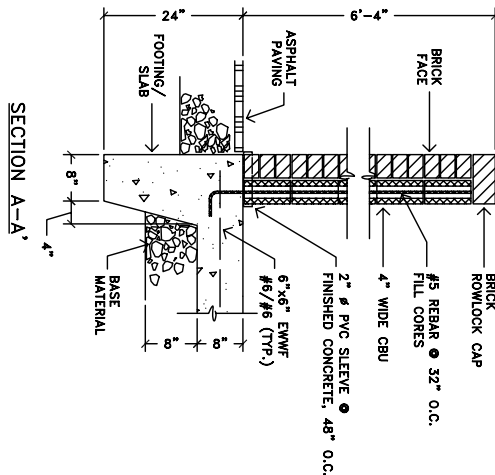




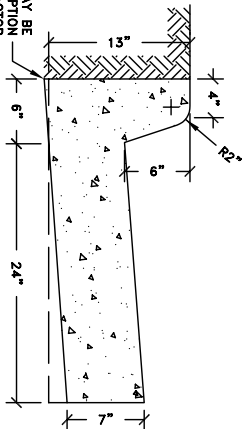
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C 1 C 8

DUMPSTER ENCLOSURE

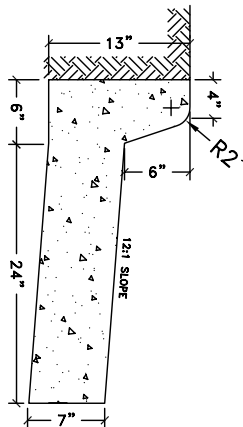
NOT TO SCALE



THIS AREA MAY BE
CONCRETE AT THE OPTION
OF THE CONTRACTOR



NOTE:
1. THIS ITEM IS SIMILAR TO STD. CG-6 EXCEPT THE GUTTER PAN SLOPE IS REVERSED.
2. IT REPLACES STD. CG-6 WHERE RUNOFF FLOWS AWAY FROM THE FACE OF A CURB, AS
NOTED ON THE PLAN.

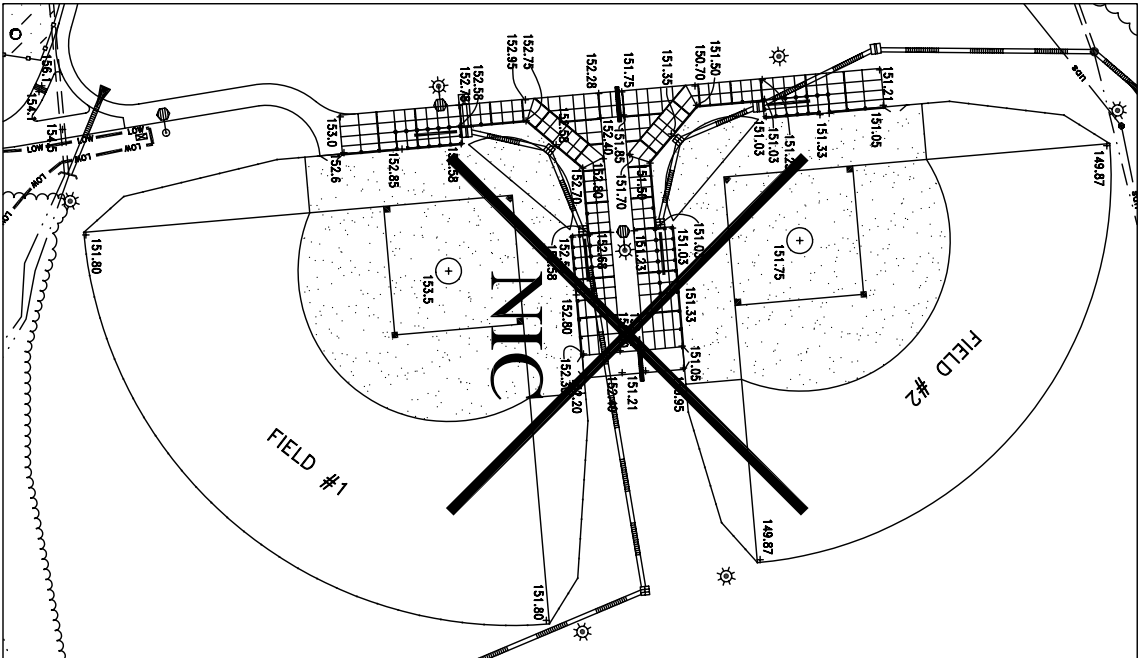


SPECIFICATION	COMBINATION 6" CURB & GUTTER
105	VIRGINIA DEPARTMENT OF TRANSPORTATION
502	201.03

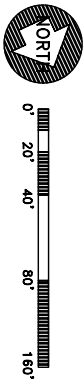
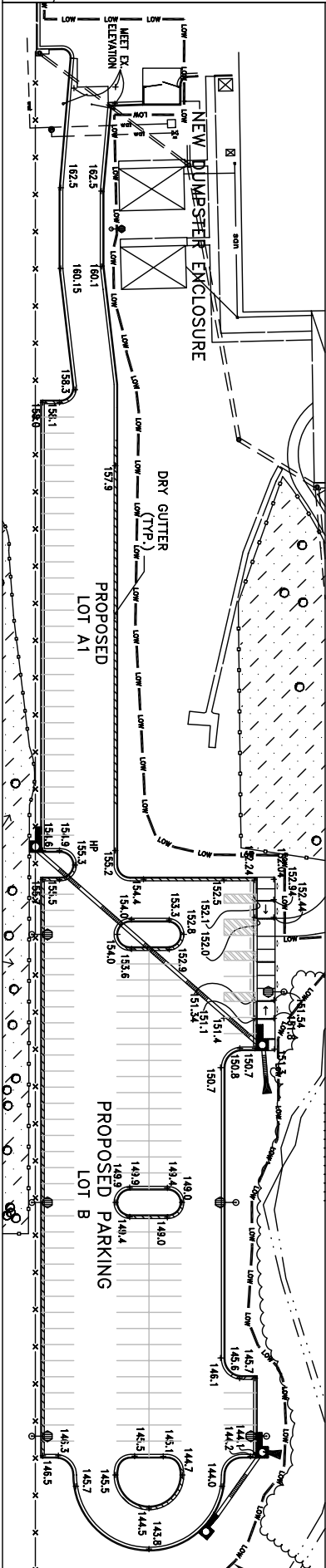
2
C 2 C 8

DRY GUTTER

NOT TO SCALE



SPOT ELEVATIONS: BASEBALL FIELDS 1 & 2, PARKING LOTS A1 & B



REVISIONS	DATE	BY	APP
1/20/00	1/20/00	3/24/00	4/78/00
1/25/03	1/25/03	1/25/03	1/25/03
DRAWN BY: BJM	DATE: 12/28/03	CHECKED BY: BJM	APPROVED BY: BJM
SCALE: 1/4"=1'	PROJECT NO.: 10588		

CONSTRUCTION DETAILS
ECOFF ELEMENTARY SCHOOL ATHLETIC FIELDS
DEPARTMENT OF PARKS AND RECREATION
COUNTY OF CHESTERFIELD, VIRGINIA

RPI LANDSCAPE ARCHITECTURE · ENGINEERING
ARCHITECTURE · RECREATION DESIGN
RESOURCE PLANNERS, INC
FAX: (800) 264-3464
PHONE: (800) 264-6967
311 NORTH-SIDE AVENUE, RICHMOND, VA 23228

PAUL R. MORETH
No. 00109
CERTIFIED LANDSCAPE ARCHITECT VIRGINIA



SHEET
C9 of 9

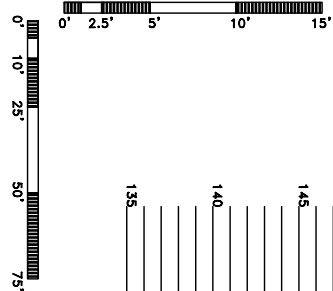
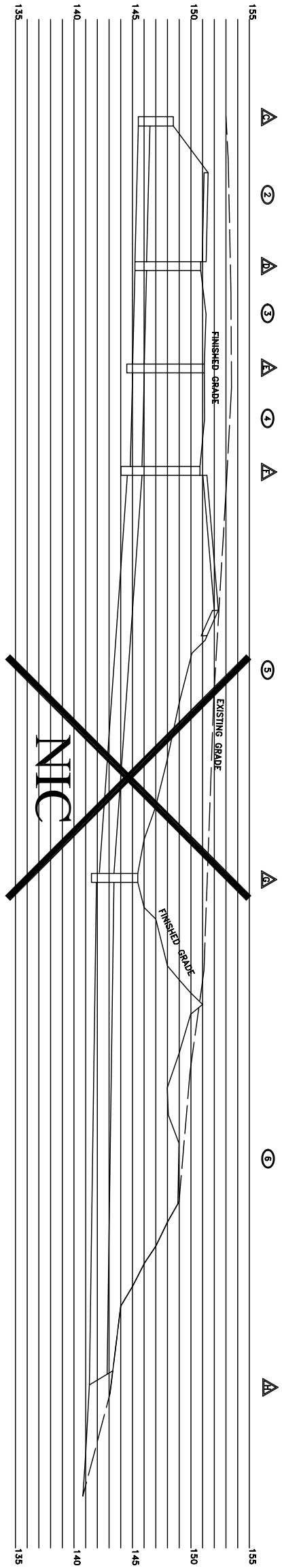
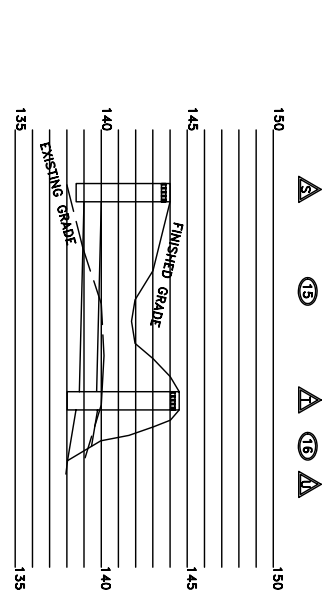
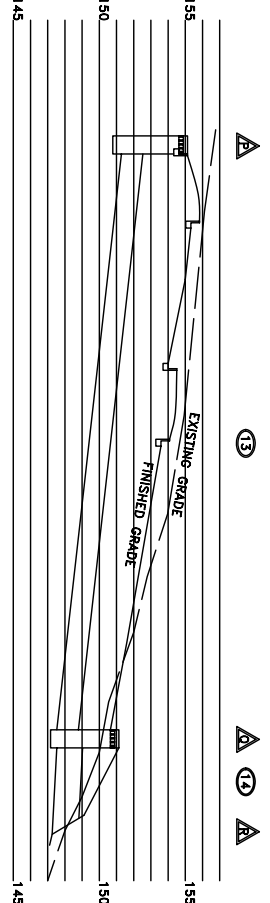
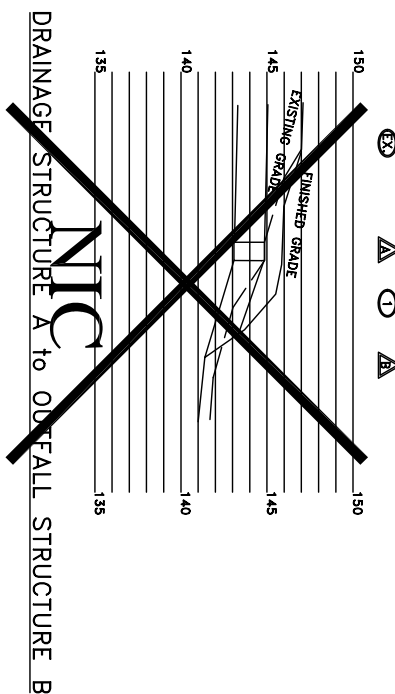
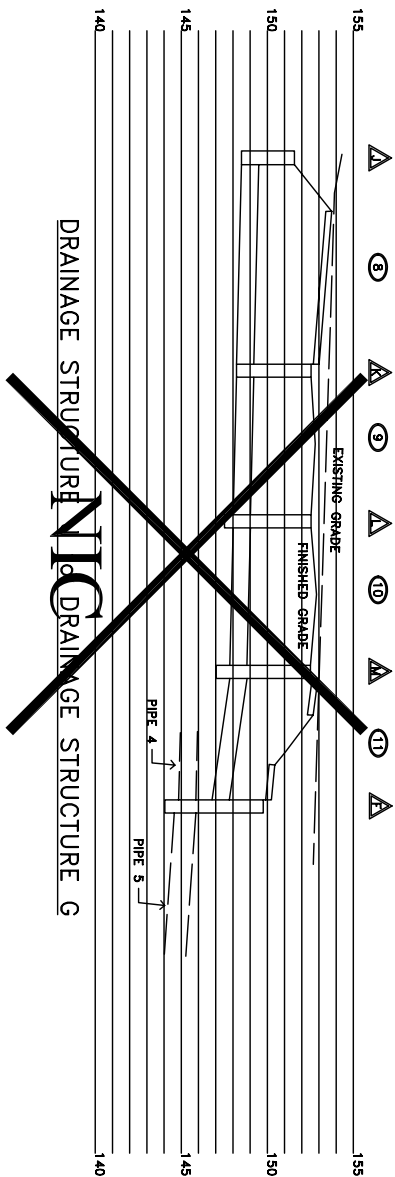
REVISIONS: 1/10/00 3/24/00 4/18/00	DRAWN BY: BAJ CHECKED BY: JRM APPROVED BY: RMM DATE: 10/20/03 SCALE: 1"=50' PROJECT NO.: 10033
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10583DP_x_demo

DEMOLITION PLAN
ECOFF ELEMENTARY SCHOOL ATHLETIC FIELDS DEPARTMENT OF PARKS AND RECREATION COUNTY OF CHESTERFIELD, VIRGINIA

RPI LANDSCAPE ARCHITECTURE · ENGINEERING
ARCHITECTURE · RECREATION DESIGN
RESOURCE PLANNERS, INC.
3111 NORTH-SIDE AVENUE, RICHMOND, VA 23226
FAX: (804) 254-3454
PHONE: (804) 251-6967

PAUL R. MORETH
No.
00109
COMMONWEALTH OF VIRGINIA
ARCHITECT
CERTIFIED LANDSCAPE



RPI

LANDSCAPE ARCHITECTURE · ENGINEERING

ARCHITECTURE · RECREATION DESIGN

RESOURCE PLANNERS, INC

3111 NORTH-SIDE AVENUE, RICHMOND, VA 23228

FAX: (800) 254-3454
PHONE: (800) 251-6957

STORM WATER PROFILES

ECOFF ELEMENTARY SCHOOL ATHLETIC FIELDS

DEPARTMENT OF PARKS AND RECREATION

COUNTY OF CHESTERFIELD, VIRGINIA

10583DP_x_profiles

REVISIONS	1/10/00
	1/30/00
	3/24/00
	4/18/00
DRAWN BY: BAJ	
CHECKED BY: JRM	
APPROVED BY: RMM	
DATE: 12/28/03	
SCALE: T=HIS; V=5'	
PROJECT NO.: 10583	

4" (MIN.) SHREDDED BARK MULCH.

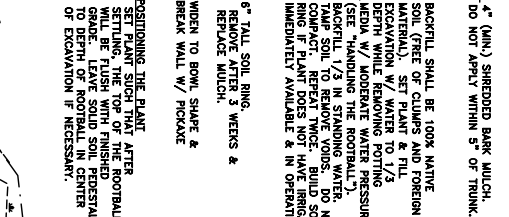
DO NOT APPLY WITHIN 5' OF TRUNK.

MEDIA W/ MODERATE WATER PRESSURE
DEPTH WHILE REMOVING POTTING
(SEE "HANDLING THE ROOTBALL").
BACKFILL 1/3 IN STANDING WATER.
TAMP SOIL TO REMOVE VOIDS. DO NOT
COMPACT. REPEAT TWICE. BUILD SO
RING IF PLANT DOES NOT HAVE IRRIGATION
IMMEDIATELY AVAILABLE & IN OPERATION.

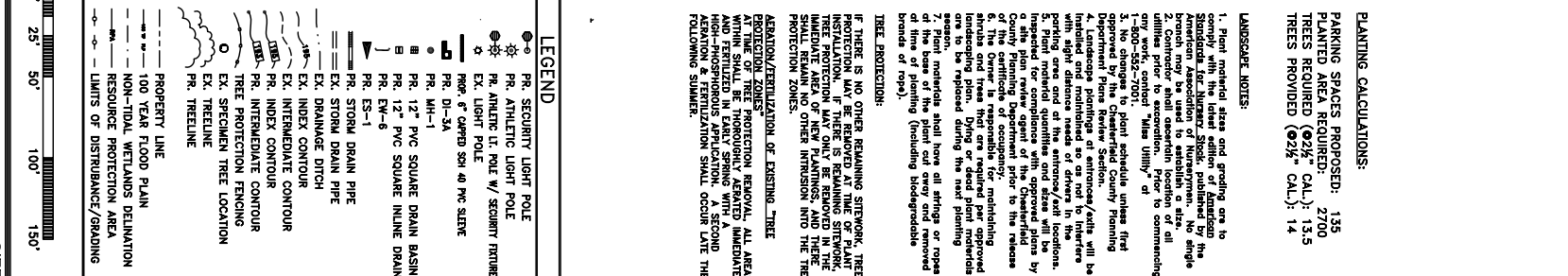
6" TAIL SOIL RING.
REMOVE AFTER 3 WEEKS &
REPLACE MULCH.

BOMBDEN TO BOWL SHAPE &
BIRKBEAK WALL W/ PICKAXE

CONDITIONING THE PLANT
SET PLANT SUCH THAT AFTER
SETTLING, THE TOP OF THE ROOTBALL
WILL BE FLUSH WITH FINISHED
GRADE. LEAVE SOLID SOIL PEDESTAL
TO DEPTH OF ROOTBALL IN CENTER
OF EXCAVATION IF NECESSARY.



25



PLANT SCHEDULE

SYMBOL	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	REMARKS
AR	<i>Acer rubrum</i>	RED MAPLE	14	2½" CAL.	B&B, CLEAR TRUNK TO 4'
CL	<i>X Cupressocyparis leylandii</i>	LEWLAND CYRESS	133	36" / 8' O.C.	B&B
QP	<i>Quercus palustris</i>	PIN OAK	9	6-8' / 15' O.C.	B&B

PLANTING CALCULATIONS:

PARKING SPACES PROPOSED: 135
PLANTED AREA REQUIRED: 2700
TREES REQUIRED (0.2% CAL.): 13.5
TREES PROVIDED (0.2% CAL.): 14

LANDSCAPE NOTES:

1. Plant seedlings and growing ones to the same depth as the original ones, to be considered for Natural Areas, published by the American Association of Nurserymen. No single source.
2. Contractor shall ascertain location of all utilities prior to excavation. Refer to commercial utility maps.
3. No changes to plant schedule unless first approved by the City of San Francisco Planning Department. Plant Review Schedule.
4. Landscape plantings at entrance/exit will be placed at least 10 feet from the curb and at least distance needed of drivers in the parking area and at the entrance/exit locations. Plantings shall be placed in the center of the lot.
5. A site plan review copy of the Chamberlaines Act shall be provided to the Planning Department for comments with approved plans by the end of the review period.
6. All trees shall be protected and maintained. Any trees that are dead, diseased, or nonfunctional shall be removed. Any dead or diseased trees shall be replaced during the final planting season.
7. Plant material shall have all strings or ropes removed. All plants shall be installed at the time of planting (including biodegradable mulch and ropes).

TYPE PROTECTION

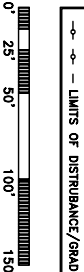
IF THERE IS NO OTHER REMAINING SITEWORK, TREE PROTECTION MAY BE REMOVED AT TIME OF PLANT INSTALLATION. IF THERE IS REMAINING SITEWORK, TREE PROTECTION MAY ONLY BE REMOVED IN THE IMMEDIATE AREA OF NEW PLANTINGS, AND THERE SHALL REMAIN NO OTHER INTRUSION INTO THE TREE PROTECTION ZONES.

“AERATION/FERTILIZATION OF EXISTING IRRIGATION PROTECTION ZONES”

AT TIME OF TREE PROTECTION REMOVAL, ALL AREAS WITHIN SHALL BE THOROUGHLY AERATED IMMEDIATELY AND FERTILIZED IN EARLY SPRING WITH A HIGH-PHOSPHOROUS APPLICATION. A SECOND AERATION & FERTILIZATION SHALL OCCUR LATE THE FOLLOWING SUMMER.

LEGEND

- PR. SECURITY LIGHT POLE
- PR. ATHLETIC LIGHT POLE
- PR. INLET/IT. POLE W/ SECURITY FURNITURE
- PR. LIGHT POLE
- PR. 6" DIAM SCH 40 PVC SLEEVE
- PR. D-3A
- PR. MH-1
- PR. 12" PVC SQUARE DRAIN BASIN
- PR. 12" PVC SQUARE INLINE DRAIN
- PR. ES-1
- PR. STORM DRAIN PIPE
- PR. 4" DIAM SCH 40 PVC
- PR. STORM DRAIN PIPE
- EX. DRAINAGE DITCH
- EX. INODE CONTOUR
- EX. INTERMEDIATE CONTOUR
- PR. INODE CONTOUR
- PR. INTERMEDIATE CONTOUR
- PR. TREE PROTECTION FENCING
- EX. SPECIMEN TREE LOCATION
- PR. TREELINE



SUPPLEMENTAL ELECTRICAL NOTES:

NOTE SECURITY LIGHTS, FIXTURES, POLES, FOUNDATIONS S9, S10, S11, S12, S13 & S14 ARE IN THIS CONTRACT. THIS CONTRACT DOES NOT INCLUDE S8 AND SECURITY FIXTURES ON ATHLETIC LIGHT POLES INDICATED. SEE NOTES

SPECIAL NOTES:

IF GLARE IS PERCEIVED OFF SITE FROM ANY ADJACENT PROPERTIES OR PUBLIC RIGHT OF WAY, SHIELDS AND LOUVERS WILL BE INSTALLED ON ALL LIGHTING FIXTURES THAT THE PLANNING DEPARTMENT DEEMS NECESSARY AS CHANGE ORDER TO THIS CONTRACT.

ELECTRICAL NOTES:

1. COORDINATE SERVICE CONNECTION WITH JOHN JAMES, VIRGINIA POWER, MIDLOTHIAN.
2. CONTRACTOR SHALL VERIFY AND MAINTAIN EXISTING UTILITIES AND RECORD LOCATIONS SUFFICIENT TO PREVENT INJURY TO PERSONS OR DAMAGE TO PROPERTY.
3. PROVIDE UTILITY PLANS FOR LOCATION OF WATER AND SEWER LINES.
4. ALL ATHLETIC LIGHTING FIXTURES SHALL BE 1500W TO STEINER "TK" OR HI-TEK "KOL," 250W METAL HALIDE. EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL.
7. ALL CABLE SHALL BE DIRECT BURIED EXCEPT AS NOTED OTHERWISE.
8. 60" CONDUCTORS SHALL BE ROUTED APPROX 4" ABOVE GRADE. PROVIDE LOCATOR TYPE AT 12" BELOW GRADE.
9. ALL POLES OVER 30' (ABOVE GRADE) SHALL HAVE ARRESTERS, STEPS, SAFETY COALES, AND LIGHTING ZONES.
10. COORDINATE EXACT LOCATION OF CONTROL CABINET ON FIELD AT PROPERTY LINE GENERALLY EAST OF THE NEW PARKING LOTS SHALL BE MAXIMUM 0.5 TO HORIZONTAL. PROVIDE A COMPUTER MONITORING SYSTEM.
12. CONDUCTOR SIZES HAVE BEEN INCREASED DUE TO VOLTAGE DROP.
13. ALL POLE ROSES SHOULD BE GALVANIZED AND SHALL HAVE FLUSH, DUST TIGHT, WEATHERPROOF COVER WITH PRE-CAST CONCRETE BASE.
14. GROUND FAULT OUTLETS, IF REQ'D, SHALL BE IN NEMA 4 WP BOXES W/ HINGED, CLAMPED, GASKETED COVERS. BOXES SHALL BE SUPPORTED W/ 2" CONTROL CABINET. "OFF" SWITCHES INSIDE CABINET AS SHOWN ON PLAN (1/FIELD).
15. LOCATE PUSH-BUTTON "ON" SWITCHES ON FRONT OF CONTROL CABINET. "OFF" SWITCHES INSIDE CABINET AS SHOWN ON PLAN (1/FIELD).
16. CONTRACTOR SHALL BE RESPONSIBLE FOR ADDING FIXTURES WHERE TO EXISTING LAYOUT IS NOT SUFFICIENT TO MEET REQUIREMENTS.
17. ALL WORK SHALL BE COMPLETED BY 11 P.M. TO 11 P.M. AS DIRECTED BY OWNER. COORDINATE WITH OWNER.

NOTE:
AN ELECTRICAL SERVICE CENTER HAS BEEN INSTALLED UNDER A PREVIOUS CONTRACT. SPACE, A STUBBED EMPTY CONDUIT WITH PULL ROPE AND INTERNAL CIRCUITRY FOR S9-S14 HAS BEEN PROVIDED FOR CIRCUITS A9 AND A7 UNDER PREVIOUS CONTRACT. THIS CONTRACT INCLUDES FURNISHING, INSTALLING AND WIRING S9-S14 ON CIRCUITS A7 AND A9 FROM FIXTURES BACK TO DESIGNATED CIRCUITS IN EXISTING SERVICE CENTER.

LEGEND

- PR. SECURITY LIGHT POLE
- PR. ATHLETIC LT. POLE W/ SECURITY FIXTURE
- PR. LIGHT POLE
- PR. DI-3A
- PR. MH-1
- PR. 12" PVC SQUARE DRAIN BASIN
- PR. 12" PVC SQUARE INLINE DRAIN
- PR. EV-6
- PR. FS-1
- PR. STORM DRAIN PIPE
- EX. STORM DRAIN PIPE
- EX. DRAINAGE DITCH
- S10 P2 POLE DESIGNATION
- A-2 CIRCUIT DESIGNATION
- TREE PROTECTION FENCING
- EX. TREELINE
- PR. TREELINE
- PROPERTY LINE
- NON-TIDAL WETLANDS DELINEATION
- RESOURCE PROTECTION AREA
- LIMITS OF DISTURBANCE/GRADING



SITE LIGHTING ELECTRICAL PLAN

ECCOF ELEMENTARY SCHOOL ATHLETIC FIELDS
DEPARTMENT OF PARKS AND RECREATION
COUNTY OF CHESTERFIELD, VIRGINIA

RPI

LANDSCAPE ARCHITECTURE · ENGINEERING

ARCHITECTURE

RECREATION DESIGN

RESOURCE PLANNERS, INC

FAX: (800) 254-3464
PHONE: (800) 254-6967

311 NORTH-SIDE AVENUE, RICHMOND, VA 23228



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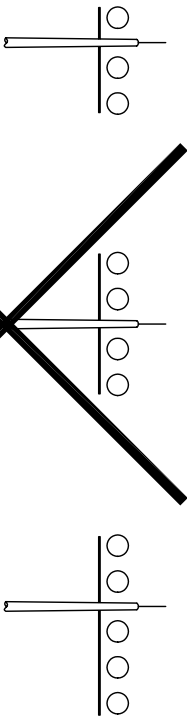
REVISIONS:
1/10/00
2/29/00
4/8/00
1/28/03

DRAWN BY: BJM
CHECKED BY: JBM
APPROVED BY: RMM
DATE: 12/29/03
SCALE: 1"=50'
PROJECT NO.: 10583

SHEET
E1 OF 2

SITE PLAN No.: 00PR0176

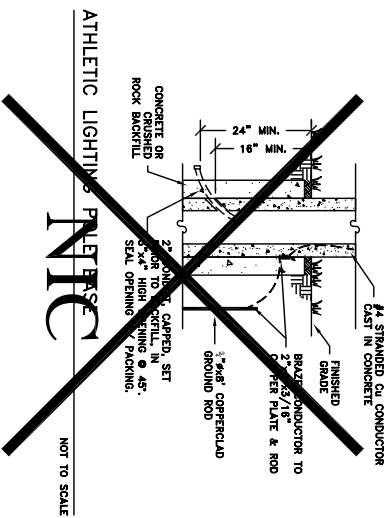
ALL WORK THIS SHEET ACCOMPLISHED BY PREVIOUS CONTRACT EXCEPT FOR:
SECURITY LIGHTS S9-S14 ON CIRCUITS A7-A9. THIS CONTRACT INCLUDES FURNISHING, INSTALLING AND WIRING FIXTURES FROM INDICATED LOCATIONS BACK TO PROVIDED DESIGNATED CIRCUITRY WITHIN ELECTRICAL SERVICE CENTER.



POLES P1, P2, P3
POLES P4, P5, P6
(3 EACH SIDE)

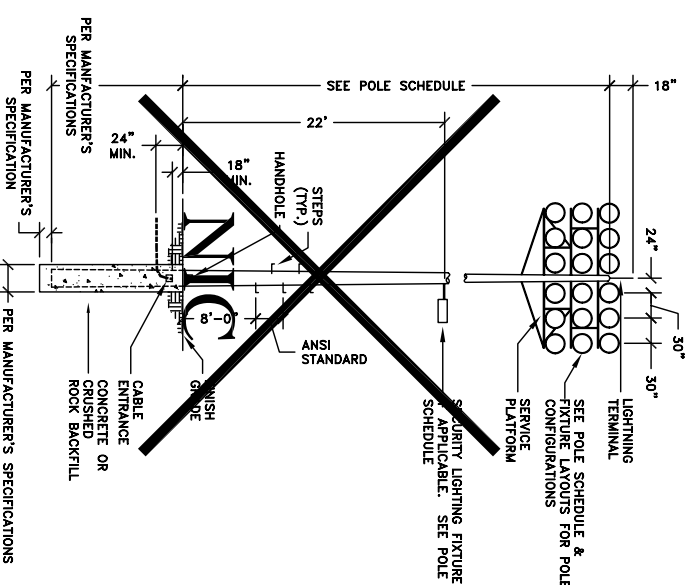
ATHLETIC FIXTURES DIAGRAMS

NOT TO SCALE



ATHLETIC LIGHTING

NOT TO SCALE

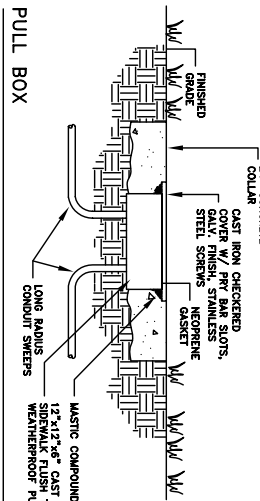


ATHLETIC LIGHTING

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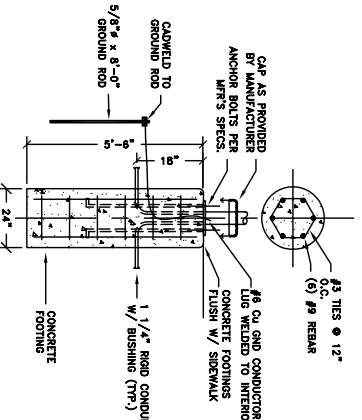
GENERAL NOTES:

- ALL PENETRATIONS SHALL BE SEALED WITH AN APPROVED SEALANT OR UL LISTED PENETRATION DEVICE THAT WILL MAINTAIN THE FIRE, SMOKE AND WATERPROOF RATINGS OF THE TYPE OF CONSTRUCTION BEING PENETRATED.
- ANY/ON PULL CORD SHALL BE INSTALLED IN ALL EMPTY CONDUITS.
- THE DESIGN SHOWN ON THE DRAWINGS IS BASED ON THE LATEST PUBLISHED DATA FOR THE EQUIPMENT SPECIFIED. THE CONTRACTOR SHALL PROVIDE ALL WORK REQUIRED FOR THE ACTUAL EQUIPMENT BEING PROVIDED. ESPECIALLY WHERE ADDITIONAL WORK IS NECESSARY TO INCORPORATE SUBSTITUTIONS.
- THE CONTRACTOR SHALL NOTIFY THE OWNER 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- THE CONTRACTOR WILL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS FOR THIS PROJECT FROM CHESTERFIELD COUNTY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDING ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
- THE CONTRACTOR SHALL ENTER INTO A CONTRACT WITH AN INDEPENDENT SOILS TESTING LABORATORY TO OBSERVE THE FOOTING INSTALLATION AND BE RESPONSIBLE FOR THE VERIFICATION OF ADEQUATE COMPACTION OF BACKFILL.
- CONTRACTOR SHALL BE RESPONSIBLE FOR RE COMPACTING DISTURBED SOIL TO 90% STANDARD PROCTOR IN GRASSSED AREAS AND 95% STANDARD PROCTOR IN SOILS UNDER OR THROUGH CONCRETE OR ASPHALT PAVING.
- LOCATION OF EXISTING SEWER, WATER OR GAS LINES, CONDUITS OR OTHER STRUCTURE ACROSS, UNDERNEATH, OR OTHERWISE ALONG THE LINE OF PROPOSED WORK ARE NOT NECESSARILY SHOWN ON THE PLANS AND IF SHOWN ARE ONLY APPROXIMATELY CORRECT. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. IF THERE APPEARS TO BE A CONFLICT UPON DISCOVERY OF ANY UTILITY NOT SHOWN CONTACT "MMS UTILITY" AT 1-800-652-7001. OWNER SHALL MARK ALL PRIVATE UTILITIES.
- DAMAGE TO UTILITIES (INCLUDING UNDERGROUND) OR PROPERTY OF OTHERS BY CONTRACTOR DURING CONSTRUCTION SHALL BE REPAIRED TO PRE CONSTRUCTION CONDITIONS BY CONTRACTOR AT NO COST TO OWNER.
- EXISTING PAVEMENT AND OTHER SURFACES DISTURBED BY CONTRACTOR (WHICH ARE NOT TO BE REMOVED) SHALL BE REPAIRED TO LIKE NEW CONDITION.
- ALL UNDERGROUND ELECTRIC LINES SHALL BE INSTALLED AND TESTED SATISFACTORILY PRIOR TO COMMENCING ANY PAVING OPERATIONS WHERE SUCH UTILITIES ARE WITHIN THE LIMITS OF PAVEMENT.
- THE CONTRACTOR IS REQUIRED TO KEEP ALL DITCHES, PILES AND OTHER DRAINAGE STRUCTURES FREE FROM OBSTRUCTION UNTIL WORK IS ACCEPTED BY THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES CAUSED BY FAILURE TO MAINTAIN DRAINAGE STRUCTURE IN OPERABLE CONDITION.
- ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE (1) YEAR.



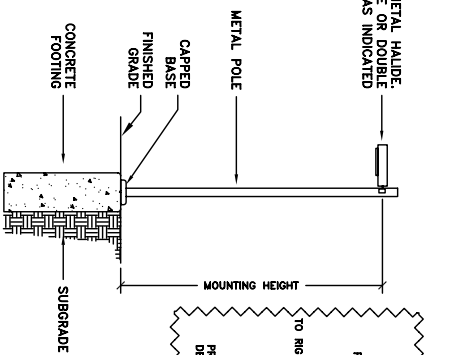
PULL BOX

NOT TO SCALE



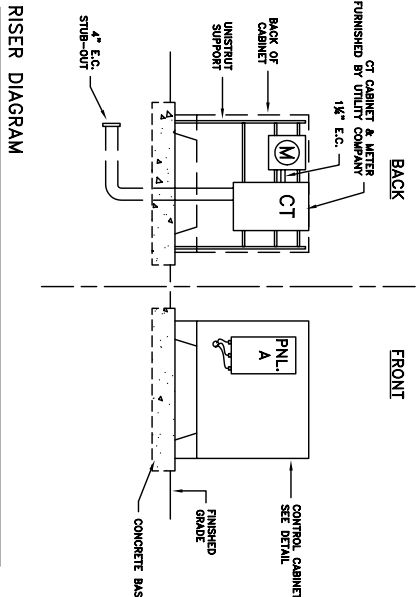
SECURITY LIGHTING POLE BASE

NOT TO SCALE



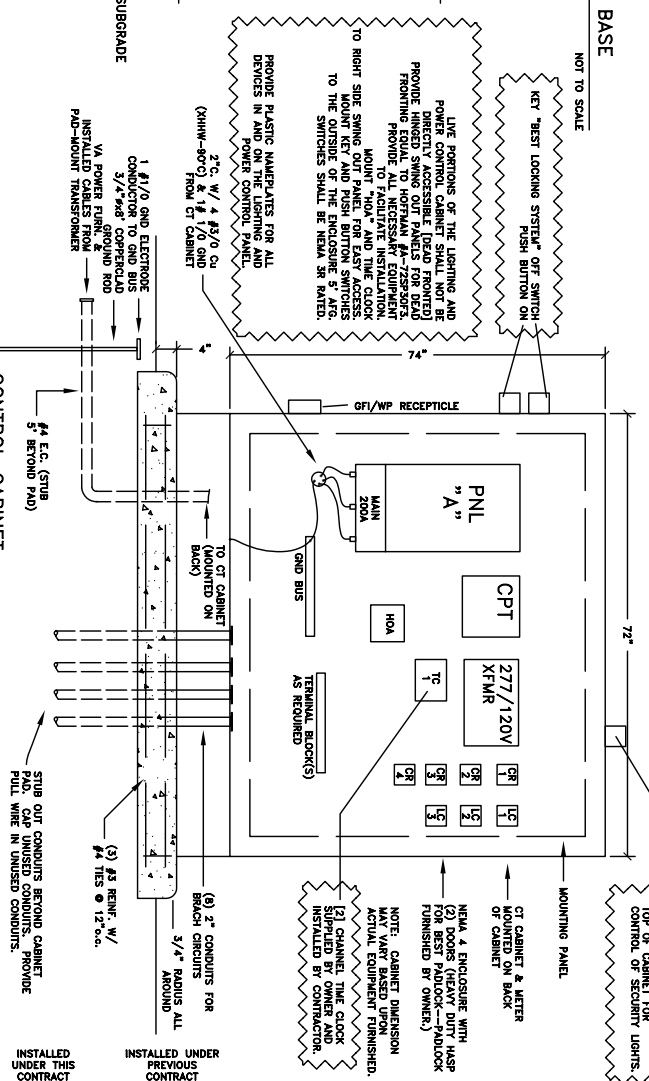
SECURITY LIGHTING

NOT TO SCALE



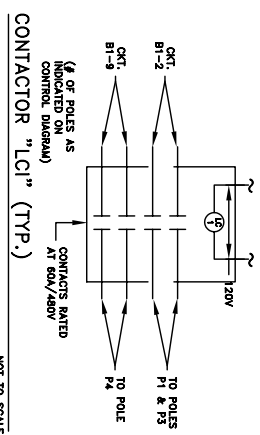
RISER DIAGRAM

NOT TO SCALE



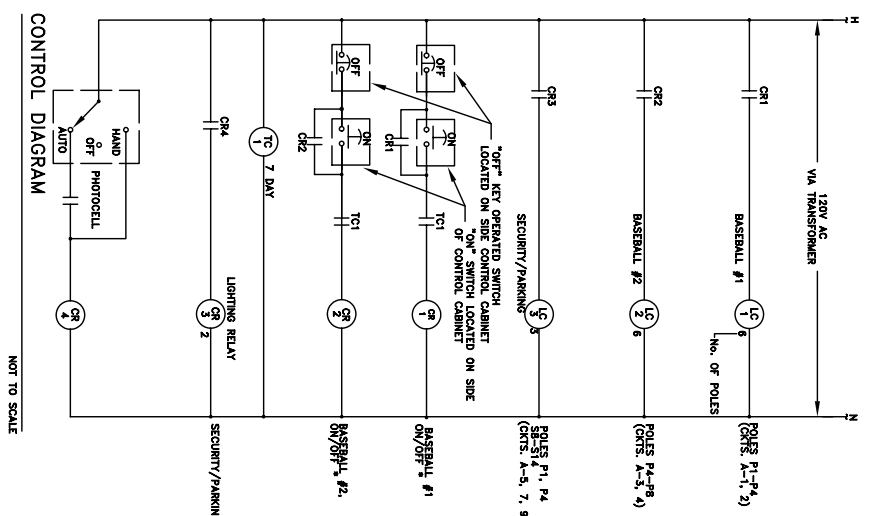
CONTROL CABINET

NOT TO SCALE



CONTROL "LCI" (TYP.)

NOT TO SCALE



CONTROL DIAGRAM

NOT TO SCALE

PANEL "A" 277/480V 3 PHASE, 4 WIRE, 200 AMP, M.C.B.									
WIRE SIZE	DESIGNATION	CIR. BKR.	CIR. 1	CIR. 2	CIR. BKR.	DESIGNATION	WIRE SIZE		
#8	BASEBALL #1	30/3	1	2	30/3	BASEBALL #1	#8		
#8	BASEBALL #2	30/3	3	4	30/3	BASEBALL #2	#8		
#10	SECURITY LTG.	20/1	5	6	20/1	TRANSFORMER	#12		
#10	SECURITY LTG.	20/1	7	8	20/1	SPACE			
SPACE	SPACE	100/3	9	10	20/1	SPACE			
SPACE	SPACE	100/3	11	12	100/3	SPACE			
SPACE	SPACE	100/3	13	14	100/3	SPACE			

LOAD SUMMARY			
BASEBALL #1	25.6 kW	(2 FUTURE FIELDS 50.0 A)	
BASEBALL #2	22.4 kW	(FUTURE CONCESSIONS 35.0 A)	
SECURITY/PARKING	3.8 kW		
TOTAL	51.8 kW	(FUTURE TOTAL 147 A)	

POLE SCHEDULE					
POLE	TYPE	MOUNTING HEIGHT	DEPTH	LENGTH	No. FIXTURES
P1	CONC*	60"	10'	70"	3 (& 1 A)
P2	CONC*	70"	10'	80"	5 (& 1 A)
P3	CONC*	70"	10'	80"	5 (& 1 A)
P4	CONC*	60"	10'	70"	6 (& 1 A)
P5	CONC*	60"	10'	70"	3
P6	CONC*	60"	10'	70"	4
P7	CONC*	60"	10'	70"	4
P8	METAL	22'	10'	70"	1
S9	METAL	22'	ON FOOTING		1
S10	METAL	22'	ON FOOTING		1
S11	METAL	22'	ON FOOTING		1
S12	METAL	22'	ON FOOTING		1
S13	METAL	22'	ON FOOTING		1
S14	METAL	22'	ON FOOTING		1

*WITH (1) 400 WATT TYPE A SECURITY LIGHT MOUNTED 22' ABOVE GRADE.



RPI
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ARCHITECTURE · RECREATION DESIGN
RESOURCE PLANNERS, INC
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SITE LIGHTING ELECTRICAL DETAILS
ECOFF ELEMENTARY SCHOOL ATHLETIC FIELDS
DEPARTMENT OF PARKS AND RECREATION
COUNTY OF CHESTERFIELD, VIRGINIA

REVISIONS
1/30/00
3/26/00
4/18/00
8/25/08
DRAWN BY: BJM
CHECKED BY: JMM
APPROVED BY: RMM
DATE: 8/25/08
SCALE: 1/4"=1'-0"
PROJECT NO.: 10588

SHEET
E2 OF 2